

**Final**  
**Removal Action Work Plan**  
**Upper Reaches of Bousch Creek**  
**(Site 1)**

Naval Station Norfolk  
Norfolk, Virginia



Prepared for  
**Department of the Navy**  
**Naval Facilities Engineering Command**  
**Atlantic**

Contract No. N62467-03-D-0260  
TO-0017

Prepared by



**December 2007**



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**Task Order 017**

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**Department of the Navy  
Naval Facilities Engineering Command  
Mid-Atlantic**

Under the

**AGVIQ-CH2M HILL JV 2 Program  
Contract N62470-03-D-0260**

Prepared by



**Virginia Beach, Virginia**



# Contents

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<b>Acronyms and Abbreviations .....</b>	<b>v</b>
<b>1 Introduction .....</b>	<b>1-1</b>
1.1 Facility Description and Background.....	1-1
1.2 Site Background and History .....	1-2
1.2.1 Camp Allen Landfill (Site 1).....	1-2
1.2.2 Camp Allen Salvage Yard (Site 22).....	1-3
1.2.3 CD Landfill (Site 6) .....	1-4
1.3 Bousch Creek Previous Investigations.....	1-5
<b>2 Objectives and Scope of Work.....</b>	<b>2-1</b>
<b>3 Description of Activities .....</b>	<b>3-1</b>
3.1 Pre-Mobilization Coordination.....	3-1
3.1.1 Utility Search .....	3-1
3.1.2 Haul Route Review .....	3-1
3.1.3 Pre-Construction ROICC Conference .....	3-2
3.2 Pre-Excavation Disposal Characterization.....	3-2
3.3 Mobilization and Site Setup .....	3-2
3.4 Site Preparation .....	3-3
3.4.1 Work Zone Delineation.....	3-3
3.4.2 Site Clearing.....	3-3
3.4.3 Erosion and Sediment Control.....	3-4
3.4.4 Nuisance Water Management / Water Dam Procedures .....	3-4
3.4.5 Spill Prevention Measures .....	3-6
3.4.6 Materials Handling Areas (Excavated Soil Stockpiles) .....	3-6
3.5 Excavation.....	3-6
3.6 Transportation and Disposal.....	3-8
3.7 Backfill and Restoration .....	3-8
3.7.1 Placement of Backfill .....	3-8
3.7.2 Restoration and Vegetation Establishment .....	3-11
3.8 Demobilization.....	3-11
3.9 Reporting.....	3-11
<b>4 References .....</b>	<b>4-1</b>

## Figures (located at the end of each section)

1-1	Location of Bousch Creek
1-2	Nearby Installation Restoration Program Sites
2-1	Preliminary Project Schedule
3-1	Haul Routes
3-2	Pre-Characterization Sediment Sample Areas



## **Tables**

- 3-1 Backfill Ecological Comparison Values
- 3-2 Proposed Native Grass Mix

## **Exhibits**

- 3-1 NAVFAC Mid-Atlantic Spill Response SOP (March 2006 Draft)

## **Appendixes**

- A Health and Safety Plan (provided electronically; hard copies to be provided to Navy and field personnel only)
- B Quality Control Plan
- C Erosion and Sediment Control Plan



# Acronyms and Abbreviations

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ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CALF	Camp Allen Landfill
CCR	Construction Closeout Report
EE/CA	Engineering Evaluation and Cost Analysis
ERA	Ecological Risk Assessment
ESCP	Erosion and Sediment Control Plan
ft	foot or feet
HSP	Health and Safety Plan
IRP	Installation Restoration Program
JV II	AGVIQ-CH2M HILL Joint Venture II
LUCs	Land-use controls
mg/kg	Milligrams per kilogram
µg/kg	micrograms per kilogram
NAVFAC	Naval Facilities Engineering Command
NSN	Naval Station Norfolk
NTCRA	Non-Time-Critical Removal Action
PAH	Poly-aromatic hydrocarbon
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
QCP	Quality Control Plan
RAWP	Removal Action Work Plan
RBC	Risk-Based Concentration
ROD	Record of Decision
ROICC	Resident Officer in Charge of Construction
SOW	Scope of Work
SVOC	Semivolatile organic compounds
TAL	Target Analyte List [metals]
TCLP	Toxicity Characteristic Leachate Product
TO	Task Order
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency



VDEQ

Virginia Department of Environmental Quality

VOC

Volatile organic compound

yd<sup>3</sup>

Cubic yard



# Introduction

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AGVIQ-CH2M HILL Joint Venture II (JV II) has been contracted by Naval Facilities Engineering Command (NAVFAC) Atlantic to implement the selected removal action in the Upper Reaches of Bousch Creek, associated with Camp Allen Landfill (CALF), Site 1, at Naval Station Norfolk (NSN), Virginia, for NAVFAC Mid-Atlantic. This work will be performed under the terms and conditions of contract N62470-03-D-0260, Task Order (TO) 017.

The selected non-time-critical removal action (NTRCA) was developed in the *Final Engineering Evaluation/Cost Analysis (EE/CA) for Upper Reaches of Bousch Creek, Naval Station Norfolk, Norfolk, Virginia* (CH2M HILL, 2007b) (referred to herein as the EE/CA) to mitigate potential ecological risk associated with sediment. The NTRCA will consist of the excavation of 2 feet (ft) of sediment throughout the designated removal areas, backfill of 1 ft of clean fill, and associated activities detailed throughout this removal action work plan (RAWP).

This RAWP is organized in sections as shown in the table of contents. Figures are presented at the end of each section. The Health and Safety Plan (HSP), Quality Control Plan (QCP), and Erosion and Sediment Control Plan (ESCP) are included as Appendixes A,<sup>1</sup> B, and C, respectively.

## 1.1 Facility Description and Background

NSN is the largest naval base in the United States and is situated on 4,631 acres of land in the northwestern portion of Norfolk, Virginia (Figure 1-1). NSN is bounded by Willoughby Bay to the north, the confluence of the Elizabeth and James Rivers to the west, and the City of Norfolk to the south and east. A portion of the eastern facility boundary is formed by Mason Creek.

NSN includes approximately 4,000 buildings, 20 piers, and an airfield. The western portion of the facility is a developed waterfront area containing the piers and facilities for loading, unloading, and servicing naval vessels. The remaining portions of the facility consist of a combination of industrial, commercial, and residential uses. Residential and recreational areas also border the facility to the south, east, and northeast.

NSN began operations in 1917, when the Navy acquired 474 acres of land to develop a naval base to support World War I activities. Bulkheads were built along the coast to extend available land and, after dredge and fill operations, the total land under Navy control was 792 acres. An additional 143 acres of land was acquired and officially commissioned for a naval air station in 1918. From 1936 through 1941, improvements to the piers and an expansion of supply/material handling facilities were also completed. During World War II,

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<sup>1</sup> Appendix A (HSP) is provided electronically only with the RAWP, except for in copies to the Navy, JV II, subcontractors, and appropriate field personnel during the sediment removal action.



a power plant, numerous runways and hangars, a tank farm, and several housing complexes were completed, with the total area of the facility expanding to more than 2,100 acres. After World War II, NSN continued to acquire land through various land transfers and significant dredge and fill operations conducted in the areas of Mason Creek, Bousch Creek, and Willoughby Bay.

NSN provides support to vessels, aircraft, and other activities. NSN also houses many tenants, each performing different operations involving the servicing and maintenance of vessels and aircraft. The service and maintenance of ships includes utilities hook-up, onboard maintenance, and coordination of ship movements in the harbor. Additional functions include loading, unloading, and handling of fuels and oils used aboard the vessels. Ship and aircraft repair operations consist of paint stripping, patching, cleaning, repainting, engine overhauls, and sandblasting. Repair operations are conducted under appropriate environmental regulations.

## 1.2 Site Background and History

All Bousch Creek history and investigations relate to the nearby Installation Restoration Program (IRP) sites that border either Bousch Creek or its tributaries, including the CALF (Site 1), the CD Landfill (Site 6), and the Camp Allen Salvage Yard (Site 22) (Figure 1-2). These sites plus storm water flow are the principal source areas or activities that may impact (or may have previously impacted) ecological receptors in Bousch Creek.

### 1.2.1 Camp Allen Landfill (Site 1)

The CALF is located in a developed area of the facility and is bordered by Bousch Creek on the north, south, and west (Figure 1-2). The landfill consists of two primary areas, Area A (the 45-acre main landfill) and Area B (a 2-acre disposal area). Various facilities are located on top of (e.g., brig and heliport) and adjacent to (e.g., CASY) the landfill areas. Residential communities lie to the west of Area A and to the south of both areas.

The Area A landfill was first developed in the early 1940s and was used until about 1974. Historically, Area A received significant quantities of municipal, solid, and hazardous wastes including general refuse; demolition debris; sludge from metal plating, parts cleaning, and paint stripping; over age chemicals; chlorinated organic solvents; acids; caustics; paints and thinners; pesticides; and asbestos. An incinerator burned combustible wastes from the mid-1940s to the mid-1960s. Incinerator ash (plus fly and bottom ash from the base power plant) were deposited in the landfill, and items too bulky for the incinerator were burned in Area A (Baker, 1994a). The Navy brig facility and a heliport were built over a portion of the Area A landfill in the mid-1970s. The remainder of Area A is now covered and re-vegetated with grasses that are regularly mowed. Area A is essentially surrounded by portions of Bousch Creek.

Area B is east of Area A and is significantly smaller in size. This area received waste from a 1971 fire at the CASY. The CASY handled lubricating oil, organic solvents, paints, paint thinners, acids, caustics, and pesticides. The residue and debris resulting from this fire were buried in trenches at Area B. Drainage ditches to the north and east of Area B are connected to Bousch Creek via a culvert that runs under the CASY.



At Area B, a NTCRA was implemented in May 1994 and completed in January 1995 (OHM, 1995). This action resulted in the removal of existing drums, debris, and 11,500 tons of soil contaminated with volatile organic compounds (VOCs), metals, and polychlorinated biphenyls (PCBs).

In 1994, a Remedial Investigation/Feasibility Study (RI/FS) was completed at the CALF (Baker, 1994a and 1994b). A Decision Document was signed in July 1995 that required hydraulic containment (and subsequently, treatment) of contaminated groundwater from the CALF (Baker, 1995a). A groundwater extraction and treatment (pumping and treatment) system was constructed at the site and began continuous operation in November 1998. Groundwater samples were collected from site monitoring wells in March 1997 and June 1998, and from extraction wells in August 1997, to provide baseline information on groundwater concentrations of numerous constituents prior to system startup. The long-term monitoring plan for the CALF groundwater remediation system calls for annual sampling of 49 groundwater monitoring wells and five Bousch Creek surface water locations for VOCs over a 5-year period, with sampling to occur every other year thereafter. Data suggests this system has achieved its design objective of hydraulic containment of site groundwater, preventing groundwater discharge to Bousch Creek and other down-gradient areas. Treated effluent from the extraction system is discharged to Bousch Creek.

### 1.2.2 Camp Allen Salvage Yard (Site 22)

The 22-acre CASY is located between Area A and Area B of the CAL (Figure 1-2). The CASY operated from the 1940s until 1995 as a salvage and scrap materials processing area. Activities at the CASY have included the storage and management of waste oils, used chemicals, and scrap industrial/commercial equipment. Metal smelting, various recycling activities, and miscellaneous burning have also occurred. In addition, the site was used to store acids, paint thinners, solvents, pesticides, and transformers. A spill of PCBs occurred at the CASY in 1989 when a transformer was damaged by a forklift, and a preliminary cleanup action was initiated at that time. When operations at the CASY ceased in 1995, all buildings, incinerators, and rail lines were demolished (Malcolm Pirnie, 1987). The site was regraded, seeded, and mulched (Shaw, 2003).

Site and remedial investigations conducted at the CASY have indicated that the surface and subsurface soil on the site were contaminated with PCBs, pesticides, and metals (Baker, 1994c). Ditch and pond sediments on the site were found to be contaminated with PCBs and metals. An interim removal action, conducted in 1998, resulted in the removal of approximately 4,000 tons of soil predominantly contaminated with PCBs and metals.

Additional soil sampling, conducted in 2001, identified six areas (hot spots) contaminated with metals scattered throughout the site (Baker, 2001). As an interim measure, the Navy began removal of the hot spot soil in conjunction with on-going PCB soil removal actions over a 2-acre portion of the site. The soil removal action achieved the PCB cleanup goals; however, additional analytical soil data showed that the areal extent of metals contamination was more widespread than previously estimated. The Navy determined the placement of a soil cover and implementation of land-use controls (LUCs) was more cost-effective than attempting the removal of all metals-contaminated soil. The NSN Tier I Partnering Team reached consensus on this course of action in March 2002.



Other remedial actions determined to be necessary at CASY included capping or filling in the drainage channel and pond (which are connected to the Bousch Creek system) located adjacent to CASY, and cleaning (sediment removal) or abandoning in place, then replacing, the storm drainage system underneath CASY (which links the CASY drainage ditch and pond with the eastern branch of Bousch Creek). An engineered soil cover and the cover for the sediments in the pond have been completed (Shaw, 2003). The final Record of Decision (ROD) addressing the soil and sediment at the site, and encompassing the overall soil and sediment cleanup strategy for the site, was signed by USEPA in September 2004. The ROD identifies the risks to the human and ecological receptors exposed to soil and sediment, establishes the remedial action objectives, and defines the LUCs for the CASY.

### 1.2.3 CD Landfill (Site 6)

The CD Landfill is located east of Hampton Boulevard and south of the Naval Exchange, and occupies approximately 22 acres (Figure 1-2). The site includes two areas where landfill operations have occurred; the eastern (unpermitted) section and the western (permitted) section. The eastern portion of the landfill operated from 1974 to 1979, and was used for the disposal of demolition debris, inert solid waste, fly ash, and incinerator residue. In October 1979, a permit was received from the Virginia Department of Health to use the western portion of the landfill for the disposal of demolition debris and other solid wastes, excluding fly ash, incinerator residues, chemicals, and asbestos. Landfilling operations continued in the western portion of the site until 1987. In 1993, most of the existing debris mounds situated in the north-central portion of the landfill were leveled and spread around the site. Two drainage ditches border the landfill to the north and south. These two ditches flow east and merge to form a tributary of Bousch Creek.

An RI (including a risk assessment) performed in 1993 and 1994 (Baker, 1995c) and an FS performed in 1996 (Baker, 1996a) identified potential risks associated with contaminants in the soil, sediments, surface water, and groundwater, and guided the development and evaluation of medium-specific remedial action alternatives. Risks associated with surface water and sediment exposures were restricted to ditch tributaries of Bousch Creek adjacent to the landfill and did not extend into the main portion of Bousch Creek. A Decision Document for contaminated ditch sediments (Operable Unit 1) was prepared in October 1996 (Baker, 1996b). This document outlined a removal action for sediments contaminated with metals and pesticides. This action was begun, and partially completed, in the fall of 1997. When a landfill cap was designed to address Operable Unit 2 (soil and groundwater), the cap was extended to cover the remaining contaminated sediments, precluding the need for further removal.

A Proposed Remedial Action Plan for Operable Unit 2, issued on 1 June 1998, identified the preferred alternative as capping with a synthetic flexible liner, groundwater monitoring, and institutional controls. The final ROD was issued on 28 September 1998, with the final landfill cap design issued in October 1998. The construction of the landfill cap was completed in December 1999. A post-closure plan, also completed in December 1999, required groundwater and surface water monitoring, annual inspections, and maintenance of the landfill's environmental controls for 10 years after the closure was completed.



## 1.3 Bousch Creek Previous Investigations

A number of sampling events have been conducted in the Bousch Creek system, which mostly center on the CALF and the CASY. Additional details and data related to Bousch Creek may be found in the Final Ecological Risk Assessment (ERA) Step 7 Report (CH2M HILL, 2006).

The first known event was the Confirmation Study conducted by Malcolm Pirnie from 1983 to 1986, during which four surface water samples were collected from Bousch Creek during each of four sampling events (Malcolm Pirnie, 1987). This study was very limited spatially and was confined to surface water. The results showed elevated metals concentrations (cadmium, chromium, lead, and zinc) in surface water and recommended further study.

An Interim Remedial Investigation (IRI) of the CALF was conducted in 1991, in which sediment and surface water samples were collected from 12 locations in Bousch Creek. Three rounds of data were collected in 1992 as part of the RI for the CALF (Baker, 1994b). Sixteen surface water and thirty-four sediment samples were collected during Rounds 1 and 2, and five sediment samples (all shallow) were collected during Round 3. In August and September 1993, eight surface water, thirteen surface sediment, and eight subsurface sediment samples were collected along tributaries of Bousch Creek adjacent to the CD Landfill as part of the RI for that site.

The Step 7 ERA for the Upper Reaches of Bousch Creek (CH2M HILL, 2006) concluded potential unacceptable risks to benthic invertebrate receptors in the Upper Reaches of the creek from exposure to metals in sediment. The metals are thought to be related to historical site practices at the CALF. The NSN Partnering Team agreed to mitigate the risk in this portion of the creek using a sediment removal strategy, which was evaluated in the EE/CA. The EE/CA referred to the metals-risk-based removal portion of the creek as the Primary Area (Figure 1-2).

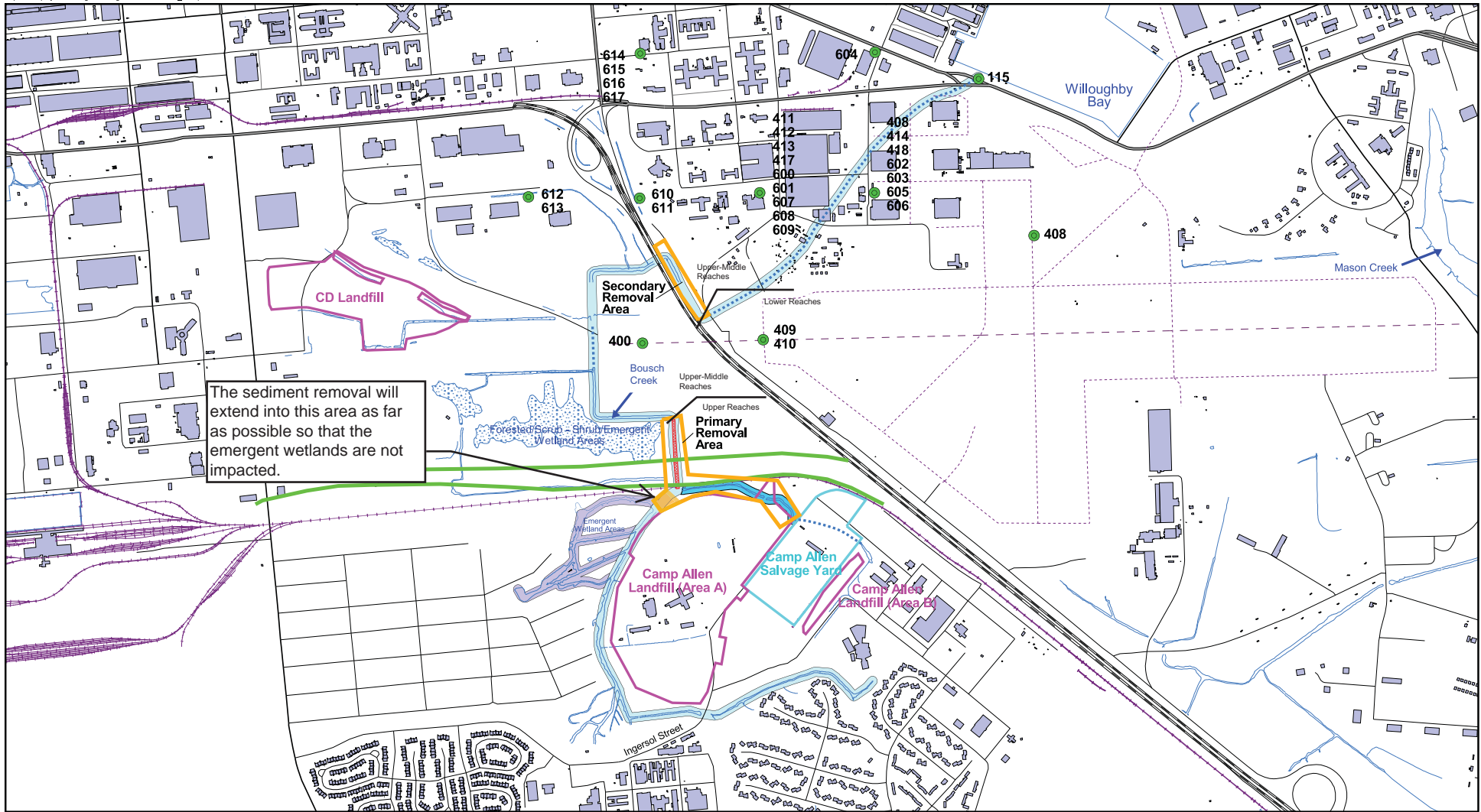
The Step 7 ERA also concluded potential unacceptable risk to benthic invertebrate receptors in the Upper-Middle Reaches of Bousch Creek, most likely from exposure to polycyclic aromatic hydrocarbons (PAHs) in sediment. The PAHs are not likely related to historical site practices at the CALF or nearby IRP sites; however, the NSN Partnering Team agreed to mitigate the risk in this portion of the creek using a sediment removal strategy, which was evaluated in the EE/CA. The EE/CA referred to the PAHs-risk-based removal portion of the creek as the Secondary Area (Figure 1-2).





**Figure 1-1**  
**Location of Bousch Creek**  
**Removal Action Work Plan - Bousch Creek**  
**Naval Station Norfolk**  
**Norfolk, Virginia**

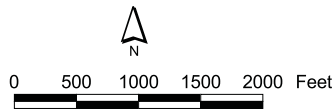




The sediment removal will extend into this area as far as possible so that the emergent wetlands are not impacted.

#### LEGEND

- Proposed I-564 Corridor (Approximate)
- Underground Culvert
- Concrete Lined
- Sediment Removal Area
- Outfall
- Eastern Branch Bousch Creek
- Western Branch Bousch Creek
- Main Branch Bousch Creek



**Figure 1-2**  
Nearby Installation Restoration Program Sites  
Removal Action Work Plan - Bousch Creek  
Naval Station Norfolk  
Norfolk, Virginia



## Objectives and Scope of Work

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As provided in the Engineering Evaluation/Cost Analysis (CH2M HILL, 2007), the objective of this removal action is to implement measures at Bousch Creek that would reduce or eliminate contaminant ecological risk drivers. This project includes the excavation of approximately 7,780 cubic yards of combined sediment from the Primary and Secondary Areas of Bousch Creek (Figure 1-2). To meet the objective of the removal action, the following tasks are scoped in TO-017 for the Primary and Secondary Areas of Bousch Creek:

- Characterize sediment to be excavated (pre-excavation activities) for waste stream profiling into an appropriate permitted Subtitle D landfill or Treatment, Storage, and Disposal Facility that can accept the waste stream (either/or referred to herein as receiving facility).
- Excavate 2 ft sediment in Primary and Secondary Areas (or to concrete in the concrete-lined channel of the Primary Area; whichever is more<sup>2</sup>).
- Transport and dispose excavated sediment at an appropriate permitted receiving facility in accordance with all local, state, and federal regulations.
- Fill excavated areas with 1 ft clean fill (except in the concrete-lined portion of the Primary Area pending depth to concrete<sup>2</sup>).
- Restore the site.

All activities associated with TO-017 SOW will be performed in a safe, compliant, and expeditious manner and in accordance with the HSP (Appendix A) and the QCP (Appendix B). The following major activities are included in the removal action SOW:

- Pre-excavation sediment characterization
- Pre-mobilization coordination (Pre-Construction Meeting)
- Mobilization and site setup
- Site preparation
- Excavation
- Transportation and disposal (may perform additional sampling as required by receiving facility)
- Backfill and restoration
- Demobilization
- Closeout Report

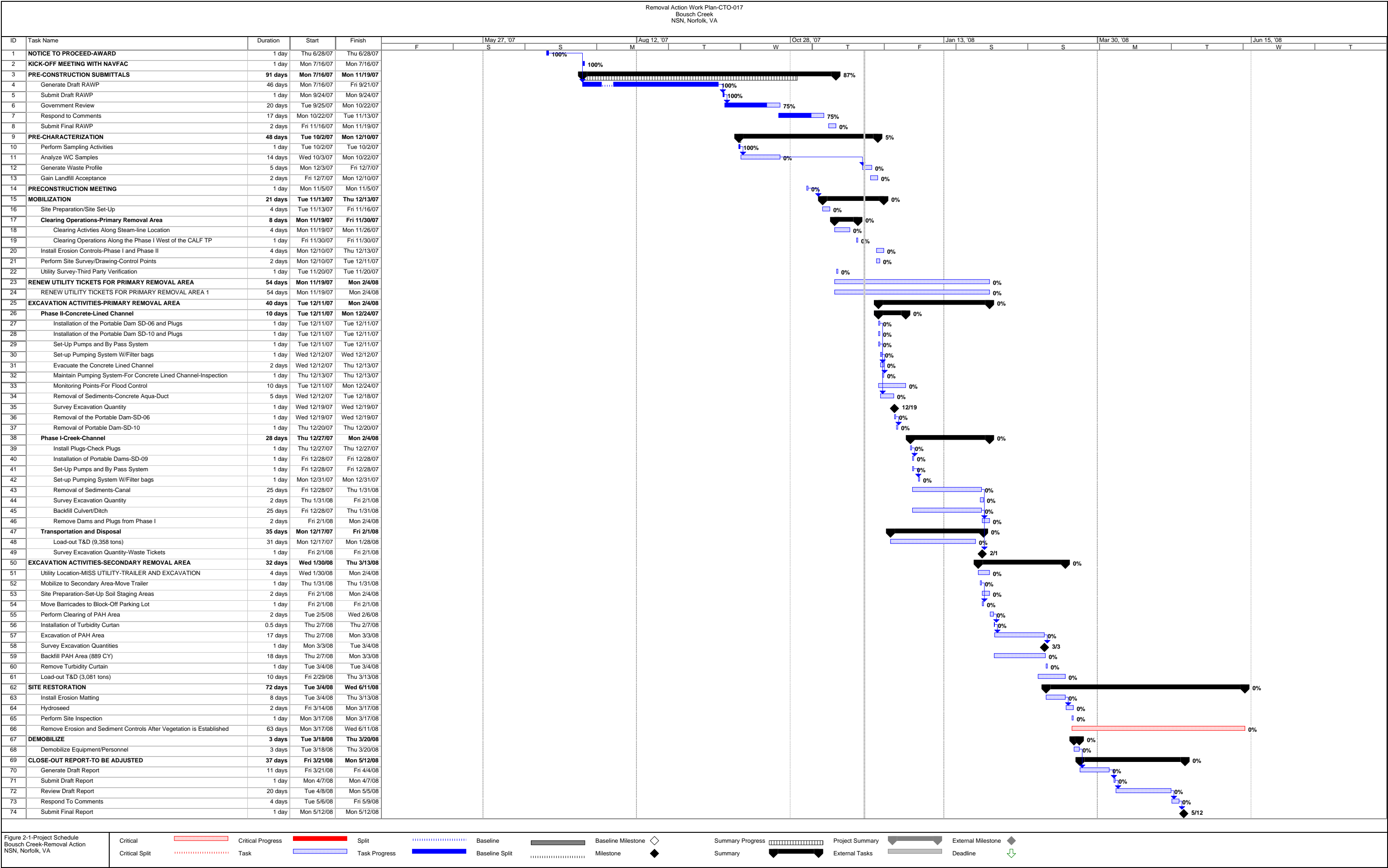
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<sup>2</sup> The operation in the concrete-lined channel in the Primary Area involves the removal of approximately 2 ft of sediment only or removal to the concrete floor, if present. Based on field observation, it appears that a concrete floor is present and the sediment thickness appears to be less than 2 feet throughout the channel. Therefore, clean backfill will not be placed into the concrete-lined portion. However, should conditions differ from initial field observation, this approach for sediment removal in the channel may be revisited.



The execution of individual tasks will be pre-planned but may overlap durations to maximize project efficiency. The proposed project schedule is presented as Figure 2-1.







## Description of Activities

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### 3.1 Pre-Mobilization Coordination

Pre-mobilization efforts will begin immediately upon approval of the Final RAWP (after the pre-construction conference). The activities described below will be addressed as part of the pre-mobilization coordination efforts.

#### 3.1.1 Utility Search

Aboveground utilities are present and have been identified within the site limits. However, underground utilities have not been fully identified at the time of RAWP preparation. All excavation areas will be addressed in accordance with Commander Naval Region Mid-Atlantic Instruction 11300.1 (HSP Attachment 19) and cleared by local utility operators through the Virginia Utility Protection Services, Inc. (Miss Utility of Virginia) notification system. It was noted that several private utility lines are located along the CALF which include, a water line, monitoring well dewatering pump system discharge lines, and submersible pumps electrical lines. These utilities will need to be located prior to excavation work in the area along Bousch Creek.

JV II will also request a utility mark-out prior to beginning any intrusive activities. JV II will supply the Navy with a drawing outlining the work area at least 1 week prior to any planned field activities or per agreed terms with the ROICC office. An independent utility locator service will also be subcontracted to perform a utility search within the excavation areas prior to any intrusive activities. A field inspection to verify the locations of utilities will be conducted to prepare the site for all subsequent construction operations. JV II will also use any other available information.

#### 3.1.2 Haul Route Review

The proposed truck delivery and egress routes for each of the Primary and Secondary Areas to minimize congestion and facilitate loading and offloading operations are shown in Figure 3-1. Prior to finalizing the vehicle routes, pre-existing conditions will be reviewed and documented. The entire onsite route, including all deficiencies and surfaces in need of repair, will be digitally photographed and submitted to the Navy for future reference. The proposed vehicle route will be driven by the site management staff as a final confirmation to ensure that no weight limitations exist over any crossings or culverts. The final site haul route will not be designated until after approval from the Resident Officer in Charge of Construction (ROICC) at the pre-construction conference. Once approved by the ROICC, the route will be posted and clearly marked for hauling vehicles entering and exiting the site. This will include signage to direct traffic (and blocking off approved parking spaces for the Secondary Area haul route) as necessary.



### 3.1.3 Pre-Construction ROICC Conference

Prior to mobilization, coordination with the NSN ROICC office will identify the date, time, and location of the pre-construction conference. JV II representatives will attend the pre-construction conference, along with ROICC, NAVFAC Mid-Atlantic, NSN emergency and security representatives, NSN flight line representatives, and/or any other invited project “stakeholders.” JV II attendees will be prepared to present and discuss the project SOW, removal action schedule, invoice schedule, health and safety concerns, quality control procedures, and any logistical issues.

## 3.2 Pre-Excavation Disposal Characterization

Characterization activities will be conducted at the site prior to mobilization and site preparation in order to determine the appropriate receiving facility. This activity will include collecting five composite sediment samples from the Primary Area and one composite sediment sample from the Secondary Area, equivalent to one characterization sample per 1,200 cubic yards (yd<sup>3</sup>), unless otherwise directed by the receiving facility. Figure 3-2 shows the limits of the six pre-characterization sampling areas labeled A, B, C, D, and E. Three grab samples will be collected within each of the six sample areas over the 2 ft removal depth interval. The grab samples will be homogenized to form one composite sample for each area. The samples will be analyzed by a certified laboratory for full toxicity characteristic leaching procedure (TCLP), reactivity, corrosivity, and ignitability, total petroleum hydrocarbons (TPH), and polychlorinated biphenyls (PCBs), unless otherwise directed by the receiving facility.

Once the characterization data are received and reviewed by JV II, they will be forwarded to NAVFAC Mid-Atlantic for review. The analytical data will be used by JV II to identify the appropriate receiving facility, subject to NAVFAC Mid-Atlantic for approval.

If the data show that the sediment results exceed the receiving facility criteria, the sediment from the section(s) of the creek that is over the criteria will be segregated. Based on field sampling notes, the sampling locations will be reestablished. Based on the linear extent of the composite sample location (Areas A, B, C, D, E, and F are shown in Figure 3-2.), sediment will be segregated during excavation and staged separately in its own drying cell. The limits of particular pre-characterization area(s) of the creek (Figure 3-2) will be marked with flags or stakes to facilitate segregation during excavation and staging. The sediment will be disposed appropriately in accordance with state and federal regulations and receiving facility permit requirements. Additional testing may be performed as required by the receiving facility.

## 3.3 Mobilization and Site Setup

Construction personnel, equipment, and materials will mobilize to the site to complete the project as defined in the SOW. Initially, key individuals and equipment will mobilize to receive equipment essential to complete the project activities. The site support areas, including the office trailer, parking areas, and sanitation facilities, will be setup at locations approved during the pre-construction conference. Site clearing will be initiated to aid in conducting a baseline site survey to set survey control points for the project.



## 3.4 Site Preparation

Once initial mobilization is completed, site preparation activities will be conducted. Site preparation will consist of work zone delineation, site clearing, pre-construction survey and temporary site benchmark installation, erosion and sediment control installation, development of nuisance water management and spill management procedures, and establishment of drying/staging areas (i.e., materials handling areas). The site clearing activities will be completed to facilitate the completion of a site survey of the Primary and Secondary Areas. This survey will generate onsite control points along Bousch Creek and a site drawing for tracking excavated depths and quantities during excavation and backfill activities. This initial site survey will be performed by a surveyor licensed in the Commonwealth of Virginia.

### 3.4.1 Work Zone Delineation

Work zones will be established and clearly delineated using fencing and signage at the project site (Primary and Secondary Areas) and vicinity. The work zones will be established based on general construction safety concerns and washing down equipment. The zones will include the exclusion zone, equipment wash down area, and support zone. Signs will be posted at the perimeter of the site (both removal areas) to restrict pedestrian use.

The exclusion zone is defined as the area of excavation where equipment is actively performing intrusive work. Only personnel and equipment essential to the operation are permitted within the exclusion zone. Personnel must be properly trained and adorned with appropriate personal protective equipment (PPE) in accordance with the HSP while working within the exclusion zone.

The equipment wash down area zone is defined as the area adjacent to the exclusion zone, and is the area in which wash down activities will be conducted. The area will be marked by traffic cones to indicate specific entry points into the exclusion zone and to indicate that specific PPE and/or training may be required prior to entering this area. Fluids generated from equipment wash down activities will be containerized and tested for offsite disposal at an approved disposal location or disposal at the CALF Treatment Plant once approved by Navy and coordinated with the CALF Treatment Plant operator.

The support zone is the area of the site that is outside of the work area and houses support activities. This area will be comprised of office trailers, equipment and clean material staging areas, and parking areas.

### 3.4.2 Site Clearing

Site clearing operations will be necessary prior to performing surveying and excavation activities in the Primary Area. Minimal clearing is required in the Secondary Area. The two areas requiring clearing in the Primary Area total approximately 0.90 acre in size (ESCP Drawing C-1 in Appendix C). They include a shrubbed and wooded area along the south bank of the Primary Area between the creek and the steam line, and the access route through the shrubbed and wooded area to the west bank of the concrete-lined channel (although the access route is an existing overgrown access road). These clearing operations will involve the use of brush and tree clearing equipment.



Site clearing operations for the project site will involve tree felling, brush removal and vegetation clearing operations. It is anticipated that land clearing shall be executed by the utilization of both mechanized heavy equipment and ground personnel. When appropriate, trees shall be felled by ground crews utilizing chain saws (or brush cutters for small diameter materials). The minimum PPE selection for site clearing operations shall be as follows.

- Long trousers, chainsaw chaps, and appropriate footwear (ANSI [American National Standards Institute]-rated).
- ANSI Z87 approved eyewear with a face shield.
- A hardhat with the visor facing forward.
- Leather work gloves.
- Long-sleeved shirt.
- Ear muffs

For land clearing operations, substitution of high visibility clothing can be considered where reflective/high visibility vests are normally utilized.

Trees and other removed vegetation will be consolidated to central processing areas via heavy equipment outfitted with appropriate material handling attachments. Felled trees and other removed vegetation shall be fed into and reduced via a large diameter wood chipper (+/-12 inches). Feeding of consolidated trees and vegetation shall be performed via the mechanized heavy equipment, to the extent possible.

Clearing operations will only remove trees to minimum height of 18 inches aboveground surface. Tree stumps (vegetation remnants) from the clearing operations will not be removed from the subsurface or grubbed from the surface areas, unless they are in the path of excavators and off-road dump trucks along the top of the creek banks.

Specific safety guidelines/practices for the clearing activities are provided in the HSP (Appendix A).

### 3.4.3 Erosion and Sediment Control

Erosion and sediment controls will be installed in accordance with the ESCP (Appendix C). Temporary erosion and sediment controls include silt fence, Aquadams®, plugs, turbidity curtains, and biodegradable jute mesh. Vegetation provides a permanent erosion and sediment control. All erosion and sediment controls will be established, inspected, and maintained as indicated in the ESCP and in accordance with the *Virginia Erosion and Sediment Control Handbook, 3<sup>rd</sup> Ed, 1992*.

### 3.4.4 Nuisance Water Management / Water Dam Procedures

The excavation areas will be pumped out as practicable and feasible to ensure the driest conditions during excavation without causing sediment entrainment during pumping. Filter bags will be used during dewatering and bypass operations when stream water levels reach approximately 6 inches from the sediment surface or when turbidity is visually confirmed (i.e., muddy water will not be pumped). Additional measures may be implemented to slow the discharge velocity to prevent scour of bottom sediments, such as filtering through hay



bales or equivalent. Nuisance water will not be discharged over the site across unstabilized, vegetated surfaces, or stormwater inlets. Waters will only be discharged back into Bousch Creek outside of work areas. Any water intrusion experienced in the open excavation area will not be pumped out prior to backfilling with clean fill. The phased approach is described below (because of tidal actions, the end points defining the removal areas cannot be defined definitively as upstream versus downstream):

- **Phase I (Primary Area east-west portion along CALF) (Appendix C, Drawing ES-1):** Portable dams (water-filled dams referred to as Aquadams) will be installed at the most eastern end of Phase I. A plug or plugs will be installed in the pipe(s) at the western end connecting Phase I to the concrete-lined channel (Phase II). A water bypass system will be set up to move water accumulating at the eastern end to discharge downstream of Phases I and II. Water from the isolated excavation area will be pumped downstream through filter bags during conditions described above. Turbidity curtains will not be installed along this section of the Primary Area because it will be a near-dry excavation using Aquadams® (excavation areas are ultimately self-contained basins); muddy water will not be pumped; and sediment-entrained water will only be pumped through filter bags.
- **Phase II (Primary Area north-south concrete lined channel) (Appendix C, Drawing ES-2):** Aquadams will be installed at the most northern and southern ends of the concrete-lined channel. A plug or plugs may be used to stop water flow from pipes/outfalls located in the concrete-line channel. Water from the isolated excavation area will be pumped downstream through filter bags during conditions described above. The water bypass system utilized for Phase I will continue to operate during the Phase II excavation activities. Turbidity curtains will not be installed along this section of the Primary Area because it will be a near-dry excavation using Aquadams® (excavation areas are ultimately self-contained basins); muddy water will not be pumped; and sediment-entrained water will only be pumped through filter bags.

If flooding is visually identified in any downstream area, the water bypass system will be re-directed to pump into an alternate downstream area. Dams and plugs would still be in-place to prevent flooding to the CALF Treatment Plant (Building CA-230).

- **Phase III (Secondary Area) (Appendix C, Drawing ES-3):** This portion of Bousch Creek will be excavated as a wet dig. Dewatering will not occur in this area during the removal action. Turbidity curtains will be installed at the up- and downstream endpoints of the Phase III excavation area.

The excavation operations will consist of removing sediment in bucket-loads using a long-reach excavator and placing the removed soils at the toe of the creek slope (below the natural stream water line) for preliminary dewatering. This sediment will then be removed from the toe (with incidental scraping of the toe) and transferred to off-road dump trucks and transported to the onsite excavated soil stockpile area where the soil will be allowed to decant (dewater) into a lined, bermed drying cell. Any accumulated water in the stockpile area(s) remaining after the drying period will be containerized into portable polyethylene or drums, analytically tested, and (a) disposed offsite and/or (b) disposed at the CALF



Treatment Plant once approved by Navy and coordinated with the CALF Treatment Plant operator.

### 3.4.5 Spill Prevention Measures

To minimize the potential for spills and or releases from stationary fuel tanks, heavy equipment, and trucks, visual inspections will be performed periodically through the work shift for signs of drips, leakage, or stains on ground surfaces on and below the equipment. A fueling area will be pre-designated in an area that will have the ground surface protected in the event of a leak or spill from overfilling. JV II will utilize a fuel vendor to deliver fuel and dispense directly into the equipment or a 500 gallon double-walled aboveground storage tank and/or containment system.

JV II will have spill prevention and containment for recovery activities for spills up to 100 gallons. A larger spill may require additional support; therefore, JV II will identify the closest offsite support subcontractor available with spill response equipment and materials. Onsite spill response equipment will include absorbent materials, sand, and other spill-containment devices necessary to prevent migration including absorbent media. Other equipment will include construction equipment used in ongoing construction activities, as outlined in Section 8 of the HSP for the site (Appendix A). The NAVFAC Mid-Atlantic Spill Response SOP (March 2006 Draft) will be onsite and is included as Exhibit 3-1.

All equipment will be inspected and maintained as necessary to ensure its proper operation in time of emergency. After an emergency, all equipment will be cleaned and ready for its intended use before normal operations resume.

### 3.4.6 Materials Handling Areas (Excavated Soil Stockpiles)

Temporary drying containment cells (estimated to be 100 ft by 100 ft, but actual size will be determined in the field and based on space) will be constructed for each of the Primary and Secondary Areas to dewater wet excavated sediment. A heavy gauge liner material (polyethylene) will be spread over the ground surface. Hay bales will be placed around the perimeter of the temporary containment cells. After the hay bales are secured to the ground with wooden stakes, the liner will be draped up and over the secured hay bales and secured with sand bags or equivalent on the exterior side of the hay bales to prevent movement. If necessary, wet sediment may be mixed with wood chips (derived from clearing operations) to aid in drying. In addition, a drying and bulking agent such as portland cement may be used only if necessary for offsite disposal. Portable polyethylene tanks or drums will be used for the storage of any remaining dewatered fluids and disposed as described in Section 3.4.4.

## 3.5 Excavation

For construction scheduling and discussion purposes, the Primary Area excavation will be divided into and referred to as Phase I (east-west portion of the creek along the northern edge of CALF) and Phase II (north-south concrete-lined channel of the creek) (Figure 3-1). The Secondary Area will be referred to as Phase III.



The excavation activities will consist of removing sediment to 2-ft-depth in the Primary and Secondary Areas (or until concrete bottom in Phase II [see footnote 2]). As described in the ESCP, excavation activities in the Primary Area will involve the use of Aquadams® (and plugs when managing creek flow from and into the concrete-lined channel) to allow for near-dry excavation (refer to Section 3.4.4. and Appendix C). An excavator will remove sediment from the south bank for the Phase I removal area, temporarily leaving the sediment at the toe of the slope of the creek (below the natural stream water line) for initial dewatering. Then the sediment will be moved over the steam line into off-road dump trucks and transported to the onsite materials handling area(s) where the soil will be allowed to dry (refer to Sections 3.4.4 and 3.4.6).

Before excavation activities in Phase II, JV II will coordinate with Norfolk & Portsmouth Belt Line Railroad. The company requested 24 to 48 hours notice prior to activities in their right-of-way. To achieve the excavation of sediment for Phase II, small rubber-tracked skid-steer equipment will be lowered into the concrete-lined channel. This equipment will move sediment to a specific south end point of the concrete-lined channel, where long-reach excavating equipment will remove the sediment from a position on the bank and place into off-road dump trucks for transport to a soil stockpile staging area.

In lieu of impacting the emergent wetlands that feed into the concrete-lined channel from the southwest (Figures 1-2, 3-1, and 3-2), JV II will use long-reach excavating equipment to reach out as far as possible from upland areas in the vicinity of sampling location BC-SD04-10 (will be field-located during site layout). Since the width of the creek (i.e., transition-area from the wetland to the creek) is estimated to be over 100 ft in this area, and is adjacent to emergent wetlands that feed into the creek from the southwest in this vicinity, excavation and backfill will be completed as far into the channel as possible around this sampling location without affecting wetlands along the edge of the creek.

The Phase III excavation activities will involve wet mechanical excavation from the north bank of the Secondary Area. The sediment will be placed temporarily on the bank at the toe of the slope for initial dewatering, and then moved to the drying cell to be located at Phase III for dewatering and mixed with drying agent as necessary (refer to Sections 3.4.4 and 3.4.6).

The TO-17 SOW, based on the approved removal alternative in the Final EE/CA (CH2M HILL, 2007b), provides for the disposal of 12,439 tons of excavated material. The selection of the preferred alternative in the Final EE/CA, Alternative 2, was based on a Tier I Partnering Team consensus agreement documented in the November 2006 meeting. This consensus agreement stated that no confirmation samples would be collected following 2 ft of excavation (or to concrete in the concrete-lined channel [see footnote 2]). Following excavation in Phases I and II, 1 ft of clean fill will be placed over excavated sediments. Based on field observation, it appears that a concrete floor is present and the sediment thickness appears to be less than 2 ft throughout Phase II. Therefore, clean backfill will not be placed into the concrete-lined portion. However, should conditions differ from initial field observation, this approach for sediment removal in the channel may be revisited. The final excavation depths will be surveyed by JV II using horizontal and vertical control points to document the removal action.



## 3.6 Transportation and Disposal

Excavated materials will be loaded from the materials handling areas for offsite disposal. Spotters and flagmen will support the loading operations to ensure level loading and coordinate truck traffic. Each hauling vehicle will be filled to less than the maximum hauling capacity to avoid spillage. Shipping papers will be completed for each load and the appropriate copies will accompany each load. Non-hazardous waste will be signed by a NAVFAC representative, with a copy provided to the ROICC. Flagmen will direct and receive the hauling vehicles via pre-determined travel routes across the site to the material staging areas. All vehicles departing from the sites will exit via predetermined haul routes (Figure 3-1). This map will be available in the site trailer for review.

Once the characterization data are received and reviewed by JV II, they will be forwarded to NAVFAC Mid-Atlantic for review. The analytical data will be used by JV II to identify the appropriate receiving facility, subject to NAVFAC Mid-Atlantic for approval.

The sediment will be disposed appropriately in accordance with state and federal regulations and receiving facility permit requirements, and coordinated with the ROICC and NAVFAC. Additional testing may be performed as required by the receiving facility.

JV II will utilize weight tickets as verified by the weight scale at the receiving facility to verify quantities of material removed. These weight tickets will be the basis for tracking and confirming quantities of material per the SOW.

## 3.7 Backfill and Restoration

### 3.7.1 Placement of Backfill

After confirming and documenting sediment excavation, JV II will begin backfilling operations. Clean fill will be delivered to the site from an offsite source. Prior to delivery, the backfill material will be analyzed to verify the selected material is protective of ecological receptors. The backfill sample will be analyzed for metals, semivolatile organic compounds (SVOCs), pesticides, PCBs, benzene, toluene, ethylbenzene, and xylenes (BTEX), and TPH. Chemical concentrations for backfill will be compared to the reference sample data average values (Table 3-1) from and USEPA Region 3 residential soil risk-based concentrations (October 2007). In the event that non-site related chemicals (e.g., pesticides) are detected at levels near or above the average reference sample data values, and are also above the maximum reference sample values, then JV II and the Navy will work with USEPA Region 3 to determine the appropriate path forward. The fill will also meet Virginia requirements of 9VAC 20 80 700(D)(5) for clean fill with a TPH concentration below 50 milligrams per kilogram (mg/kg) and a total BTEX concentration below 10 mg/kg. In addition, the fill shall be free of debris, roots, scrap material, vegetation, refuse, and soft unsound particles, and will conform to American Society for Testing and Materials (ASTM) D2487 classification SW or SM.



Table 3-1 – Backfill Ecological Comparison Values

<b>Chemical</b>	<b>Average Value Reference Samples from Step 7 ERA*</b>
Inorganics (mg/kg)	
Aluminum	12,773
Antimony	0.70
Arsenic	20.4
Barium	51.8
Beryllium	0.43
Cadmium	1.45
Calcium	2,740
Chromium	32.1
Cobalt	6.53
Copper	52.67
Iron	25,400
Lead	100
Magnesium	3,027
Manganese	136
Mercury	0.21
Nickel	16.2
Potassium	1,950
Selenium	0.88
Silver	0.29
Sodium	3,577
Thallium	1.05
Vanadium	58.3
Zinc	367
Pesticide/Polychlorinated Biphenyls (µg/kg)	
4,4'-DDD	5.40
4,4'-DDE	29.2
4,4'-DDT	4.42
Aldrin	2.45
Aroclor-1016	47.2
Aroclor-1221	96.7
Aroclor-1232	47.2
Aroclor-1242	47.2
Aroclor-1248	47.2
Aroclor-1254	47.2
Aroclor-1260	47.2
Dieldrin	4.48
Endosulfan I	2.45



<b>Chemical</b>	<b>Average Value Reference Samples from Step 7 ERA*</b>
Endosulfan II	3.75
Endosulfan sulfate	4.72
Endrin	4.72
Endrin aldehyde	4.72
Endrin ketone	4.38
Heptachlor	2.45
Heptachlor epoxide	2.45
Methoxychlor	24.5
Toxaphene	245
alpha-BHC	2.45
alpha-Chlordane	12.7
beta-BHC	2.50
delta-BHC	2.45
gamma-BHC (Lindane)	2.45
gamma-Chlordane	9.25
Semivolatile Organic Compounds (µg/kg)	
Acenaphthene	472
Acenaphthylene	472
Anthracene	472
Benzo(a)anthracene	413
Benzo(a)pyrene	427
Benzo(b)fluoranthene	440
Benzo(g,h,i)perylene	410
Benzo(k)fluoranthene	433
Chrysene	337
Dibenz(a,h)anthracene	472
Fluoranthene	280
Fluorene	472
Indeno(1,2,3-cd)pyrene	472
Naphthalene	472
PAH (total)	6,385
Phenanthrene	410
Pyrene	280

\* *Final Ecological Risk Assessment – Step 7, Upper Reaches of Bousch Creek, Camp Allen Landfill (Site 1), Naval Station Norfolk, Norfolk, Virginia (CH2M HILL, 2006).*

Backfill placement will consist of 1 ft clean fill. Once the backfill material is placed by excavator in Phase I, it will be spread across the excavation areas to grade. Compaction will be incidental to the placement and spreading of the material. Based on field observation, it appears that a concrete floor is present and the sediment thickness appears to be less than



2 ft throughout Phase II. Therefore, clean backfill will not be placed into the concrete-lined portion. However, should conditions differ from initial field observation, this approach for sediment removal in the channel may be revisited. Backfill will be placed in Phase III with an excavator (no dewatering).

Backfill and final activities completed at the site will be documented by surveying the site after activities have been complete to record the final elevations. JV II will complete this survey utilizing the established control points. The information will be documented in the daily reports and the closeout report.

### 3.7.2 Restoration and Vegetation Establishment

Permanent site stabilization will include the installation of jute mesh on disturbed slope areas and hydroseeding with an approved native grass mix (Table 3-2) consistent with existing conditions (CH2M HILL, 2006). No wetland areas will be disturbed during construction. Silt fence or other erosion and sediment control measures will remain in place until site restoration is complete, including the establishment of vegetation (where appropriate).

Table 3-2 – Proposed Native Grass Mix

Grass Seed	Pounds/Acre (pure live seed)
Big Bluestem ( <i>Andropogon gerardi</i> )	4
Little Bluestem ( <i>Schizachyrium scoparium</i> )	6
Switchgrass ( <i>Panicum virgatum</i> )	2
Indiangrass ( <i>Sorghastrum nutans</i> )	6
Canada Wild Rye ( <i>Elymus canadensis</i> )	10
Partridge Pea ( <i>Cassia fasciculata</i> )	2
Annual Rye Grass ( <i>Lolium multiflorum</i> )	25

## 3.8 Demobilization

A final site closeout inspection will be performed by NAVFAC Mid-Atlantic prior to complete demobilization. The inspection will focus on work that has been performed or will be performed prior to project completion. Items that are incomplete or require further work to meet the project specification will be documented by the designated Quality Control Manager and corrected by the project team within a reasonable time. Once completed, NAVFAC Mid-Atlantic will be advised in writing and a final inspection will be conducted involving the same personnel to verify the items in question have been completed. Once the final inspection is complete and the work is accepted, JV II will complete demobilization of personnel and equipment. Materials used during the performance of site activities will be removed and/or properly disposed.

## 3.9 Reporting

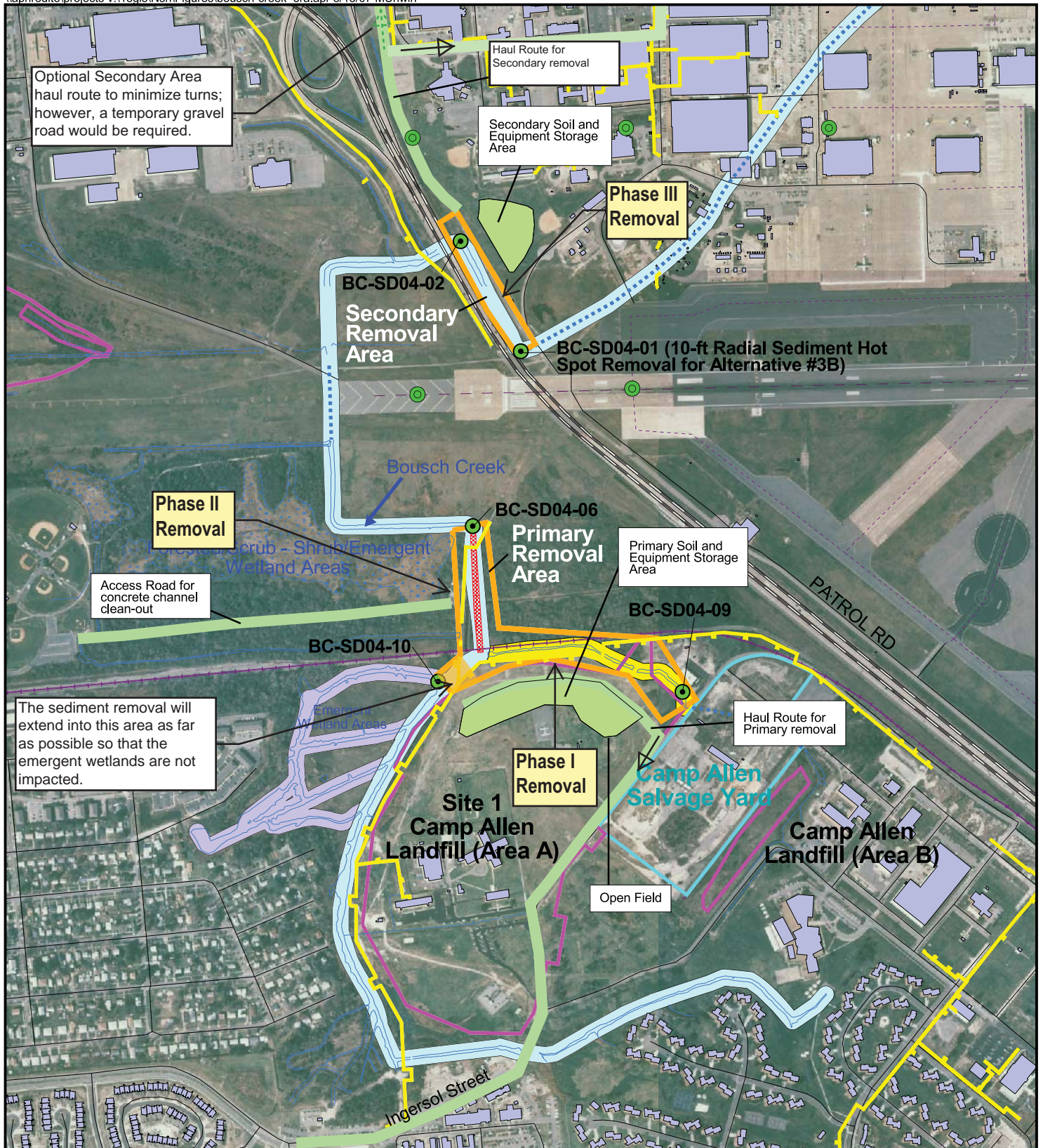
At the conclusion of field activities, JV II will prepare a Construction Closeout Report. This report will summarize all of the project activities, provide verification that the scope of work is complete, and document the final site inspection and acceptance. This report will include the following:



- Description of activities completed
- Transportation and disposal records
- Daily operations and Quality Control reports
- Health and safety summaries
- Analytical results and sample locations
- Tables and figures depicting relevant data

The draft report will be distributed for Navy, USEPA, and Virginia Department of Environmental Quality (VDEQ) review. Final versions will include the draft document, comments, response to comments, final document and other relevant information that should be included in the administrative record file.



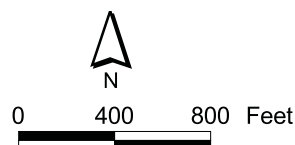


## LEGEND

- Underground Culvert
- Steam Lines
- Concrete Lined
- Sediment Removal Area
- Outfall
- Sediment Sampling Location
- Haul Routes

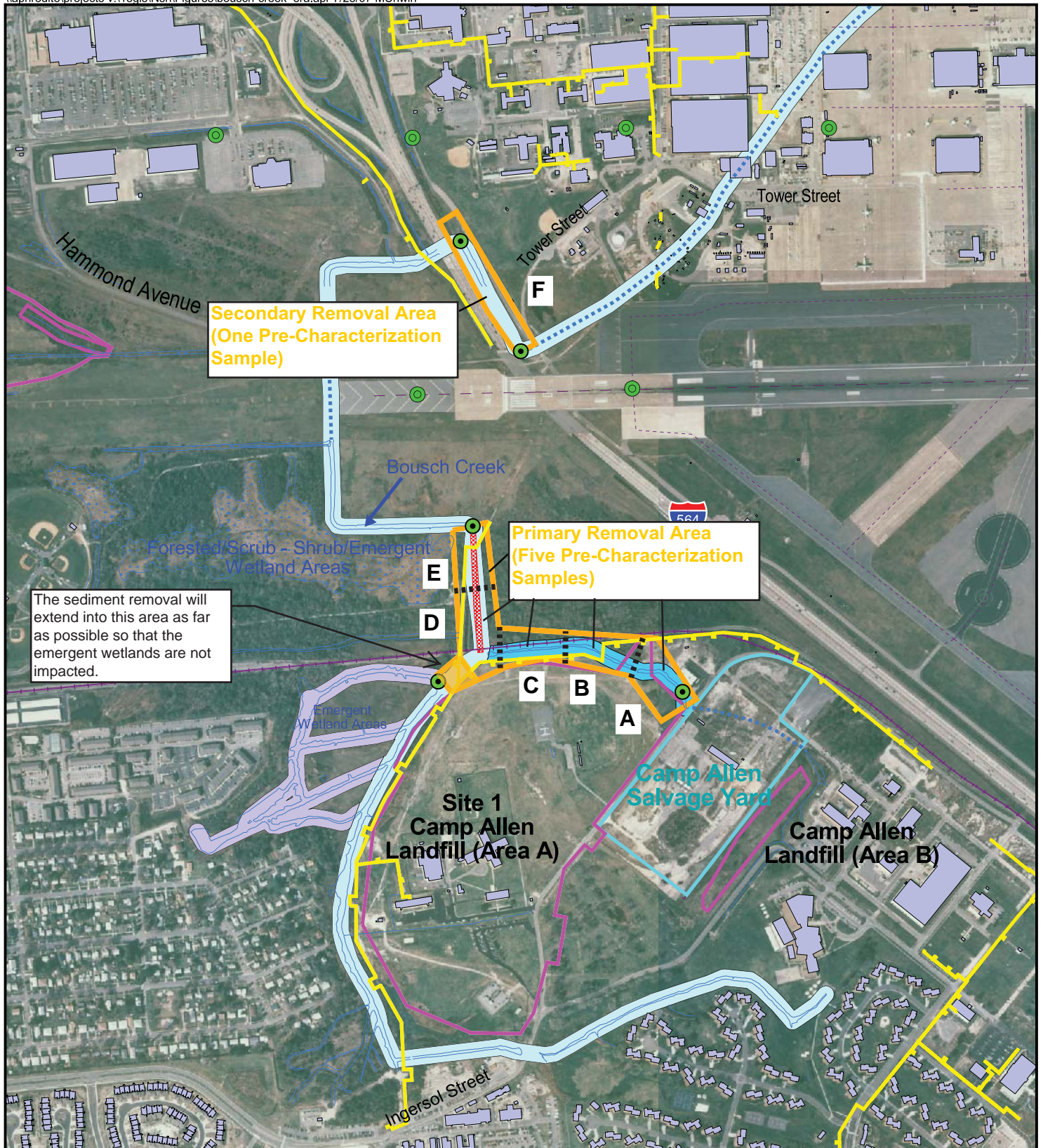
- Eastern Branch Bousch Creek
- Western Branch Bousch Creek
- Main Branch Bousch Creek

Refer to the Erosion and Sediment Control Plan (Appendix C) for additional details.



**Figure 3-1**  
**Haul Routes**  
**Removal Action Work Plan - Bousch Creek**  
**Naval Station Norfolk**  
**Norfolk, Virginia**





# **LEGEND**

- Underground Culvert
- Steam Lines
- Concrete Lined
- Sediment Removal Area
- Outfall
- Sediment Sampling Location
- Eastern Branch Bousch Creek
- Western Branch Bousch Creek
- Main Branch Bousch Creek



0 400 800 Feet

**Figure 3-2**  
**Pre-Characterization Sediment Sample Areas**  
**Removal Action Work Plan - Bousch Creek**  
**Naval Station Norfolk**  
**Norfolk, Virginia**



NAVFAC Mid-Atlantic Spill Response SOP  
Removal Action Work Plan - Bousch Creek  
Naval Station Norfolk  
Norfolk, Virginia



SPILL RESPONSE SOP  
MARCH 2006 (DRAFT)

## RESPONSE AND REPORTING OF OIL AND HAZARDOUS SUBSTANCE SPILLS

### *Standard Operating Practice*

**1. Purpose:** The purpose of this SOP is to outline the procedures and responsibilities that shall be used by the NAVFAC MIDLANT Hampton Roads Public Works Departments, IPTs, and Business Lines doing work in the Hampton Roads AOR whenever an oil or hazardous substance spill occurs as a result of in-house or contracted operation.

**2. Background:** Oil and or hazardous substance spills can occur from MIDLANT operations. It is important that the command takes the proper action to contain, control, and report spills to protect personnel and the environment and comply with the CNRMA's region's spill policy.

**3. Policy:** NAVFAC MIDLANT Public Works Departments, IPTs, and Business Lines shall comply with COMNAVREG MIDLANT INSTRUCTION 5090.3 DATED 30 April 2004 or subsequent updates by responding to, cleaning up, and reporting spill that occur as a result of NAVFAC operations. The Environmental Business Line shall maintain corporate knowledge of spills that occur due to command operations, issue internal command guidance as needed, lead the investigation of significant spills, and resource a readiness capability to respond to spills when the Region determines a response or clean up is required.

**4. Effective Date:** 10 March 2006 ( target )

#### **5. Definitions:**

**Spill:** A spill is an unauthorized release in any amount by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of oil or hazardous substance into the environment (air, water, or land, including pavement). There is no minimum amount. Authorized releases are those permitted explicitly by agreement with the CNRMA Regional Environmental Group (Code N45) and expressly included in a work ticket or contract.

**Oil:** Includes fuels, lubricating oils and greases, hydraulic fluids, petroleum, mineral, and synthetic oils, electrical transformer oils, cooking grease and oils, and oily sludges.

**Hazardous substance:** For Navy reporting purposes: a hazardous substance is any solid, liquid, mixture, or vaporous substance that is identified is a hazardous or toxic material, or a waste. Sewage, sewage sludges, garbage, refuse, contaminated soil, and materials that mix and contaminate stormwater or potable water are consider reportable. Steam, potable water, or uncontaminated stormwater or groundwater is not considered a hazardous substance.

#### **6. Enclosures:**

1. Oil and Hazardous Substance Spills - Action Check List
2. Spill notification and message process
3. Message Template for Oil Spill
4. Message Template for Hazardous Substance Release

#### **7. Specific Responsibilities:**

##### **a. The Spiller shall:**

- Immediately notify the Installation's Emergency Dispatcher/ Emergency Communication Center (ECC) if you directly discover a spill or if your contractor reports a spill to you. Report what you know about the spill. See the attached Spill Action Check List and spill notification / message process.





## **SPILL RESPONSE SOP MARCH 2006 (DRAFT)**

### **MIDLANT**

- Notify the NAVFAC MIDLANT Regional Operations Center, ROC (757-444-3477 or 757-445-6868) that a spill has occurred. The ROC may inform you that they have already been notified if someone outside of your operation discovered the spill.
- If trained in accordance with the OSHA HAZWOPER standard, ascertain the source of the spill and stop it, if it is safe to do so. Maintain overall safe control of the site. Expect the Fire Department to respond. The installation Environmental Office may also visit the site. Site control initially belongs to the Fire Department but could transfer to a Facility Incident Commander if the situation warrants.
- Clean up the spill if you have the appropriate resources and training to do so and can do so safely. The installation ECC may call the Fire Department. Follow the Fire Department direction because upon arrival they assume incident command and control. For contracted operations, the contractor is the financial responsible party for the cost of response, and cleaning up, and restoration of the site. NAVFAC MIDLANT is the responsible party for in-house operations. In the case of a contractor's operations, the contractor shall be made financially responsible. Any cleanup expenses incurred by the Region will be back charged to NAVFAC MIDLANT.
- For minor spills, remain on site through out the clean up operation. When operations are being done by contract, the contractor's safety officer shall remain on site. For NAVFAC MIDLANT in-house operations, the supervisor / foreman shall remain on site until clean up is complete.

### **b. The Construction PM or Spiller's Product Line Coordinator shall:**

- Directly notify their chain of command via the "HEADS UP" reporting system. Note for some business lines this services is provided by the NAVFAC MIDLANT ROC.
- Generate a draft Navy Message to report the spill in accordance with the attached templates. Send the draft message within one business day of discovering the spill to the IPT Spill Coordinator. See the attached Spill notification and message process chart. For spills of 100 gallons and larger, the message should be send out within 24 hours. For spills that occur between 1400 on Fridays and before 1400 on Sundays, the NAVFAC MIDLANT Command Duty Officer shall draft and released the message. The NAVFAC MIDLANT CDO shall also draft and release spill messages for spills that occur on holidays.
- The ECC will call the National Response Center for spills that reach water. Secure the National Response Center case number and include in the navy message by calling the ECC.
- Maintain a back up person to handle spill notification when on leave or travel.
- Maintain your name on the HEADS UPs System Distribution List for the geographical area they serve.
- Note that the template for an oil spill and a hazardous substance spill are different. Send the draft spill message to the HR IPT's Spill Coordinator via email. Follow up message sit-reps are required if the spill cannot be contained and cleaned up within 24 hours.
- Support the EV Business Line during a spill investigation.

### **b. The IPT Spill Coordinator shall:**

- Finalize the draft Navy spill notification message, and present up the chain of command for message release. Ensure the NAVFAC PWO and CNRMA N45 installation environmental storefront office, where the spill occurred, is copied on messages and follow up reports.
- Track spills status to determine if follow up reports are forthcoming. Arrange for follow up reports with Product Line Coordinators as appropriate.
- Maintain spill support back up when on leave or travel.
- Arrange for technical support as appropriate from the EV Business line to other Business Lines. Note: Operational support to respond to a spill is tasked from the Installation's Emergency Communications Center or the NAVFAC MIDLANT ROC or the EV Service Dispatch Desk.
- Assume Incident Commander duties or delegate to the IPT (OPHREV3) when requested by the Incident Commander for the spill response/oil recovery taskings. Upon request advise the Incident Commander and or the NOSC of the technical aspects of any spill tasking.





**SPILL RESPONSE SOP  
MARCH 2006 (DRAFT)**

**MIDLANT**

**c. The EV Business Line: shall:**

- Maintain a record of all spills that occur due to NAVFAC MIDLANT operations.
- Maintain environmental clean up capability 24/7 to respond to minor oil spills and hazardous substance releases on or from Navy property within a 50-mile radius of Norfolk.
- Conduct inquiree of any NAVFAC MIDLANT spill that exceeds 100 gallons and report findings to the CNRMA N45 NOSC and / or NNSY Code 106 as appropriate within seven calendar days. Support JAG investigations as requested.
- Functionally the EV Business Line supports the Region's request to articulate OBOS funding requirements for maintenance and repairs of oil spill equipment, manages and coordinates command support to the Region's Spill Management Team, funds special spill training for their employees to function on Facility and Regional Response Teams, participates in response exercises when funded, prepares an annual budget request on behalf of the Command for Region Spill Response support, provides internal technical spill management guidance, and conducts appropriate internal awareness training to IPTs, other business Lines, and Public Works Departments.

**8. Questions** about this policy should be directed to the EV Support Branch





MIDLANT

**SPILL RESPONSE SOP  
MARCH 2006 (DRAFT)**

**OIL AND HAZARDOUS SUBSTANCE SPILLS  
ACTION CHECKLIST**

Note: This SOP is based on COMNAVREG MIDLANT INSTRUCTION 5090.3 DATED 30 April 2004.

**A Spill is:** an unauthorized release of oil or hazardous substance in **any amount** by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting escaping, leaching, dumping or disposing of oil or hazardous substance in to the environment (air, water, or land, including pavement). There is no minimum amount. Authorized releases are those explicitly included in a contract and covered by permit.

**When you discover a spill:**

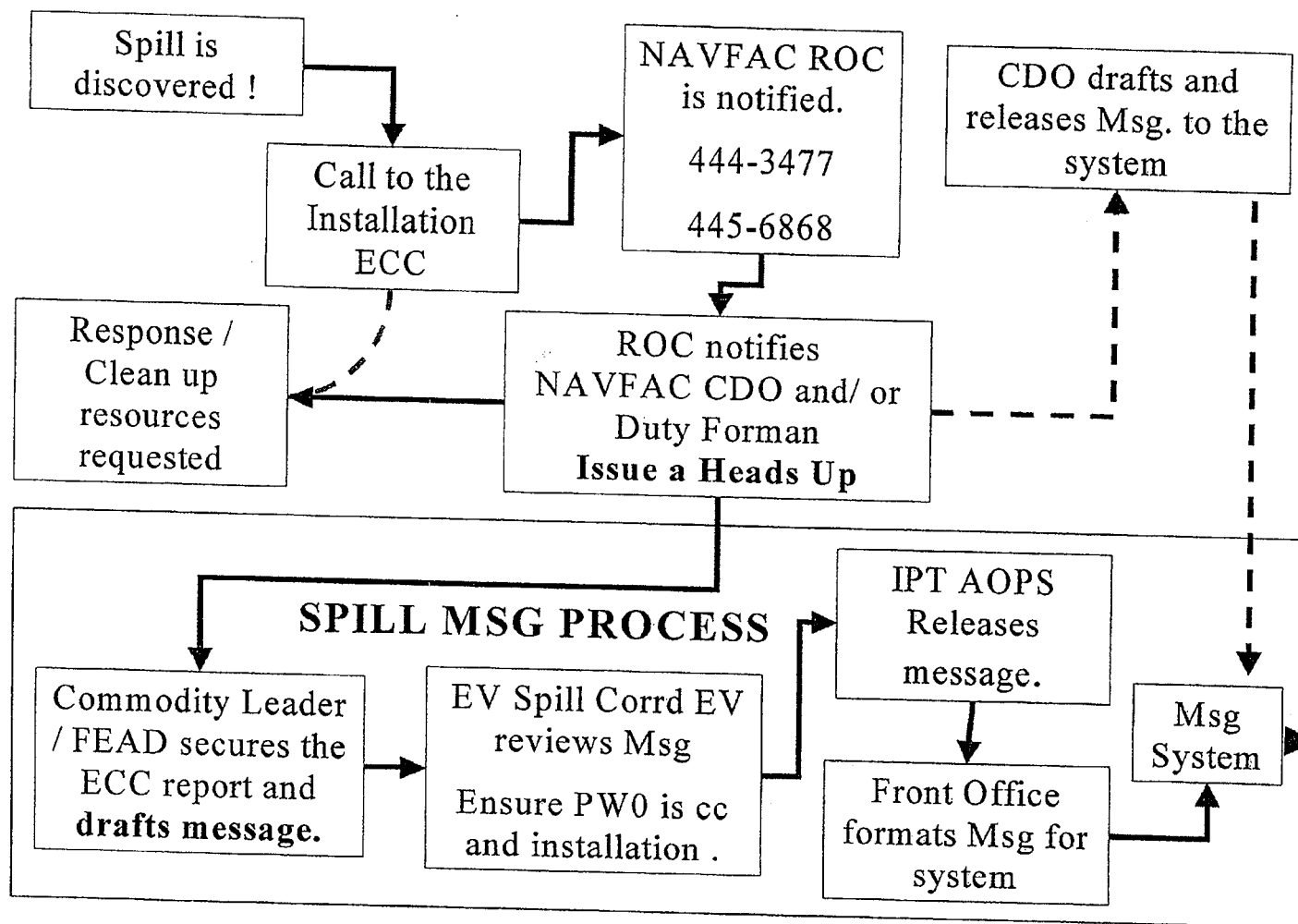
1. **Immediately notify the Installation's  
EMERGENCY COMMUNICATIONS CENTER (ECC)**

NNSY	396-3333	Ykt / CAX	887-4911	NAVSTA	444-3333
St. Js	396-3333	Camp Peary	757-229-2121	NSA	444-3333
St. Helena	396-3333	Ykt Fuels	887-4911	LCreek:	462-4444
Craney Is	322-9911	Sugar Grove	304-249-6399	Wallops Is	757-824-1333
Hospital	953-5777	Dam Neck	492-6302	Fort Story	422-7141
Northwest	421-8334	Oceana	433-9111	Harvey Point	252-426-5221

- ❖ If the spill is headed off base, or actually occurs off base, also call the CNRMA Regional Operations Center: 757-322-2607.
2. Then immediately notify the NAVFAC MIDLANT ROC (757-444-3477 or 757-445-6868)
  3. If you are trained in accordance with the OSHA HAZWOPER standard, ascertain the source of the spill and stop it, if it is safe to do so. Maintain overall safe control of the site. The contractor is the financial responsible party for cleaning up of spill that results from contract operations. Expect the Fire Department to respond. The installation Environmental Office may also visit the site. Site control initially belongs to the Fire Department but may transfer to a Facility Incident Commander if the situation warrants. Contractors, ROICC, and shop personnel shall follow the direction of the Fire Department or Incident Commander.
  4. Verify that the spiller (contractor or shop personnel) has adequate resources or has resources on the way to stabilize the situation. For oil releases, this could include oil booms, absorbents material, skimmers, vacuum trucks and trained personnel to deploy these resources. If the contractor or shop is slow to react or the resources appear inadequate, the Regional may deploy its in-house oil recover/ oil response unit. The contractor (via the PWD or Business Line) will be back charged for Regional expenses. If something has sunk, the contractor should mobilize equipment for salvage /recovery and, if applicable, submit a plan to the Region's NOSC for Coast Guard review and approval.
  5. As soon as information is available on the spill situation, (1) ensure a "HEADs UP" report is issued via the HEADs Up system and (2) prepare and send a draft Navy spill message via email to the Spill Coordinator(s) located in the Hampton Roads IPT. The message should be sent within one business day of spill discovery. Follow up reports may be required if the spill cannot be contained and cleaned up within 24 hours. See attached message templates.



**SPILL RESPONSE SOP**  
**MARCH 2006 (DRAFT)**







MIDLANT

**SPILL RESPONSE SOP  
MARCH 2006 (DRAFT)**

**OIL SPILL TEMPLATE**

FM: NAVFAC MIDLANT//  
TO: COMNAVREGMIDLANT NORFOLK VA//N45//  
NAVFAC ATLANTIC NORFOLK VA //EV//  
COMNAVFACENGCOM WASHINGTON DC//ENQ-DP//  
INFO: [HOST INSTALLATION] //00//  
NAVFAC MIDLANT//[RESPONSIBLE PWD//  
CNO WASHINGTON DC//N45//  
CHINFO WASHINGTON DC//JJJ//  
COMNAVSEASYS COM WASHINGTON DC//00C//  
NAVFAC MIDLANT//EV//  
NFESC PORT HUENEME CA//424//  
NAVPETOFF ALEXANDRIA VA//JJJ//  
COMCOGARD SECTOR HAMPTON ROADS VA//JJJ//  
COGARD NATIONAL RESPONSE CENTER WASHINGTON DC//JJJ//  
UNCLAS//N05090//  
MSGID/GENADMIN/ NAVFAC MIDLANT//  
SUBJ/ **OIL SPILL REPORT**, [xx GALLIONS,/ Host  
Installation/location]  
REF/A/DOC/OPNAVINST 5090.1B//  
AMPN/REF A IS THE ENVIRONMENTAL AND NATURAL RESOURCES PROGRAM  
MANUAL  
RMKS/1. LOCAL TIME AND DATE SPILL OCCURRED/DISCOVERED:  
2. FACILITY ORIGINATING SPILL: [list the name of your NAVFAC  
operation or business line and list contractor's name if spill  
occurred from a contractor's work.]  
3. SPILL LOCATION:  
4. VOLUME SPILLED IN GALLONS:  
5. TYPE OF OIL SPILLED:  
6. OPERATION UNDERWAY WHEN SPILLS OCCURRED/DISCOVERED:  
7. SPILL CAUSE:  
8. SLICK DESCRIPTION AND MOVEMENT:  
9. SPILL ENVIRONMENT  
    A. WEATHER: CLEAR.  
    B. PREVAILING WINDS:  
    C. AIR AND WATER TEMPERATURE:  
    D. SEA STATE:  
    E. TIDE:  
10. AREAS DAMAGED OR THREATENED: [list body of water of natural  
resource affected]  
11. TELEPHONIC REPORT TO NATIONAL RESPONSE CENTER [WAS /WAS  
NOT] MADE. (Contact the Installation's Environmental Office or  
the Installation ECC to see they made a call to the NRC.  
NAVFAC is not to make this call. The Host Activity decides  
when to make this call and can provide you with the reference  
call number.) , CONTROL NUMBER XXXXXX, POC:  
12. SAMPLES [WERE/WERE NOT] TAKEN. [list location is samples  
were taken]  
13. CONTAINMENT METHOD USED: [list those taken or planned]  
14. SPILL CLEAN UP METHOD: [list those taken or planned]





**SPILL RESPONSE SOP  
MARCH 2006 (DRAFT)**

**MIDLANT**

15. VOLUME OF PRODUCT REMOVED IN GALLONS: [Indicate volume or weight of pure product recovered. Also indicate the amount of contaminated product recovered with whatever it was mixed with, i.e. soil or water]
16. PARTIES PERFORMING SPILL REMOVAL:
17. FEDERAL, STATE, OR LOCAL REGULATORY ACTIVITY DURING THIS INCIDENT: [list name of any agency that may have come to the spill site, usually 'NONE']
18. ASSISTANCE REQUIRED/ADDITIONAL COMMENTS:
19. LESSONS LEARNED: [How could this have been prevented?]
20. ACTIVITY CONTACT FOR ADDITIONAL INFORMATION: [Provide FEAD's, AROICCs, or Business line POC's phone number and email address]

BT

NNNN





MIDLANT

**HAZARDOUS SUBSTANCE RELEASE  
MESSAGE TEMPLATE**

**HAZARDOUS SUBSTANCE SPILL TEMPLATE**

ADMINISTRATIVE MESSAGE

ROUTINE

R ZYB

FM: NAVFAC MIDLANT//

TO: COMNAVREGMIDLANT NORFOLK VA//N45//

NAVFAC ATLANTIC NORFOLK VA //EV//

COMNAVSEACOM WASHINGTON DC//ENQ-DP//

INFO: [HOST INSTALLATION] //00//

NAVFAC MIDLANT//[RESPONSIBLE PWD//

CNO WASHINGTON DC//N45//

CHINFO WASHINGTON DC//JJJ//

COMNAVSEASYS COM WASHINGTON DC//00C//

NAVFAC MIDLANT//EV//

NFESC PORT HUENEME CA//424//

COMCOGARD SECTOR HAMPTON ROADS VA//JJJ//

COGARD NATIONAL RESPONSE CENTER WASHINGTON DC//JJJ//

UNCLAS//N05090//

MSGID/GENADMIN/ NAVFAC MIDLANT//

SUBJ/ **HAZARDOUS SUBSTANCE RELEASE REPORT**/[quantity in gallons and installation location, e.g. 40 GALLIONS, YORKTOWN NAVAL WEAPONS STATION, YORKTOWN, VIRGINIA.]

REF/A/DOC/OPNAVINST 5090.1B//

AMPN/REF A IS THE ENVIRONMENTAL AND NATURAL RESOURCES PROGRAM MANUAL RMKS/1. LOCAL TIME AND DATE RELEASE OCCURRED/DISCOVERED:

2. FACILITY ORIGINATING RELEASE: [list the name of your NAVFAC operations or business line and list contractor's name if spill occurred from a contractor's work.]

3. RELEASE LOCATION:

4. VOLUME SPILLED IN GALLONS OR OUNCES:

5. TYPE OF SUBSTANCE RELEASED: [list name of hazardous material, note for reporting purposes sewage is considered a hazardous substance.]

6. TYPE OF OPERATION AT THE SOURCE OF RELEASE: [construction, repair shop, waste pumping, waste conveyance, etc.]

7. RELEASE CAUSE:

8. TYPE OF CONTAINER FROM WHICH SUBSTANCE ESCAPED:

9. RELEASE ENVIRONMENT

A.WEATHER: CLEAR.

B.PREVAILING WINDS: N/A

C. AIR AND WATER TEMPERATURE: N/A

D. SEA STATE: N/A

E.TIDE: N/A

10. AREAS DAMAGED OR THREATENED:

11. NOTIFICATIONS MADE AND ASSISTANCE REQUESTED: [indicate if the ECC was called and if the NRC call was made by the ECC.]

12. FIELD TESTING: [indicate the findings and conclusions as to concentration, pH, etc.]

13. CONTROL AND CONTAINMENT ACTIONS: [list actions taken or planned]

14. CLEAN-UP ACTIONS PLANNED/TAKEN: [list actions taken or planned]





MIDLANT

**HAZARDOUS SUBSTANCE RELEASE  
MESSAGE TEMPLATE**

- 15. AMOUNT OF SUBSTANCE RECOVERED: [volume/ weight]
  - 16. PARTIES PERFORMING CONTAINMENT/CLEAN-UP ACTIVITIES:
  - 17. FEDERAL, STATE, OR LOCAL REGULATORY ACTIVITY DURING THIS INCIDENT: [list name of any agency that may have come to the spill site. usually 'NONE']
  - 18. ASSISTANCE REQUIRED/ADDITIONAL COMMENTS:
  - 19. LESSONS LEARNED: [How could this have been prevented?]
  - 20. ACTIVITY CONTACT FOR ADDITIONAL INFORMATION: [Provide FEAD's AROICCs, or Business line POC's phone number and email address]
- BT  
NNNN



## SECTION 4

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## Appendix A

### Health and Safety Plan

---



# Health and Safety Plan

Removal Action  
Site 1, Bousch Creek,  
Naval Station Norfolk  
Norfolk, Virginia

Contract No N62467-03-D-0260  
Contract Task Order 017

Prepared for:



Department of the Navy  
Naval Facilities Engineering Command  
Mid-Atlantic Division

Prepared by



AGVIO — CH2M HILL  
Joint Venture II

December 2007





# Contents

1.0	Introduction.....	1-1
1.1	Base Background .....	1-1
1.2	Site 1 Background .....	1-1
1.3	General Task Order Scope of Work.....	1-2
1.4	HAZWOPER-Regulated Tasks.....	1-3
1.5	Non-HAZWOPER-Regulated Tasks .....	1-3
1.6	Hazard Analyses.....	1-3
2.0	Project Organization and Personnel.....	2-1
2.1	Employee Medical Surveillance and Training .....	2-1
2.2	Project Safety Responsibilities .....	2-1
2.2.1	Key Safety Personnel.....	2-2
2.3	JV Subcontractors .....	2-4
3.0	Project-Specific Hazards .....	3-1
3.1	Adverse Weather .....	3-1
3.2	Clearing and Grubbing - General.....	3-2
3.2.1	Site Clearing - Tree Felling .....	3-2
3.2.2	Site Clearing - Chainsaws/Brushcutters .....	3-4
3.2.3	Site Clearing -Chippers .....	3-4
3.2.4	Machine Guarding.....	3-5
3.3	Cranes .....	3-6
3.4	Demolition.....	3-6
3.5	Drilling Safety .....	3-6
3.6	Electrical Safety .....	3-6
3.6.1	Control of Hazardous Energy .....	3-7
3.7	Excavation Activities .....	3-7
3.7.1	Confined Space Entry .....	3-8
3.7.2	Work Adjacent to Railway Easements .....	3-10
3.7.3	Stairways and Ladder Use .....	3-11
3.8	Fire Prevention .....	3-12
3.9	Flight Line and Taxi-way Areas .....	3-12
3.10	Hand and Power Tools .....	3-13
3.11	Haul Trucks .....	3-14
3.12	Heavy Equipment .....	3-15
3.13	Manual Lifting .....	3-16
3.14	Noise .....	3-16
3.15	Pressure Washing Operations .....	3-17
3.16	Sample Handling .....	3-18
3.16.1	IDW Drum Handling or Sampling .....	3-18
3.17	Survey Lasers.....	3-19
3.18	Unknown or Unanticipated Buried Objects .....	3-19
3.19	MEC/MPP Support .....	3-19
3.20	(Exposure to) Vehicular Traffic .....	3-20
3.21	Visible Lighting .....	3-21
3.22	Working Around Material Handling Equipment .....	3-22



3.22.1	Rigging.....	3-22
3.22.2	Suspended Loads .....	3-23
3.22.3	Powered Industrial Trucks.....	3-23
3.23	Working Above or Near Water .....	3-24
3.24	General Hazards.....	3-24
3.24.1	General Practices and Housekeeping.....	3-24
3.24.2	Hazard Communication.....	3-25
3.24.3	Shipping and Transportation of Chemical Products .....	3-25
3.24.4	Heat Stress .....	3-25
3.24.5	Monitoring Heat Stress.....	3-26
3.24.6	Cold Stress .....	3-27
3.25	Procedures for Locating Buried Utilities.....	3-28
3.26	Biological Hazards and Controls.....	3-29
3.26.1	Snakes .....	3-29
3.26.2	Poison Ivy and Poison Sumac .....	3-31
3.26.3	Ticks.....	3-32
3.26.4	Bees and Other Stinging Insects.....	3-32
3.26.5	Bloodborne Pathogens.....	3-32
3.26.6	Mosquito Bites.....	3-33
3.26.7	Brown Recluse Spiders.....	3-33
3.26.8	Widow Spiders .....	3-34
3.26.9	Rabid Animals .....	3-35
3.26.10	Fire Ants.....	3-35
3.27	Constituents of Concern .....	3-36
3.27.1	Potential Routes of Exposure.....	3-1
3.27.2	Radiological Hazards and Controls .....	3-1
4.0	Behavior Based Loss Prevention System .....	4-1
4.1	Activity Hazard Analysis .....	4-1
4.2	Pre-Task Safety Plans .....	4-2
4.3	Loss Prevention Observations .....	4-2
4.4	Loss/Near-Loss Investigations.....	4-2
5.0	Personal Protective Equipment .....	5-1
6.0	Air Monitoring/Sampling .....	6-1
6.1	Air Monitoring Specifications .....	6-1
6.2	Calibration Specifications .....	6-1
7.0	Decontamination .....	7-1
7.1	Decontamination Specifications.....	7-1
7.2	Diagram of Personnel-Decontamination Procedures.....	7-1
8.0	Spill-Containment Procedures.....	8-1
8.1	Procedure for Containing/Collecting Spills.....	8-1
9.0	Site-Control Plan .....	9-1
9.1	Site-Control Procedures .....	9-1
9.1.1	Site Control for MEC/MPP or Other Restricted Access Areas .....	9-2
9.2	HAZWOPER Compliance Plan.....	9-2
10.0	Emergency Response Plan.....	10-1
10.1	Pre-Emergency Planning.....	10-1
10.2	Emergency Equipment and Supplies.....	10-1



	10.3	Incident Reporting, Investigation and Response .....	10-2
	10.4	Emergency Medical Treatment.....	10-3
	10.5	Evacuation.....	10-5
	10.6	Evacuation Signals .....	10-5
	10.7	Incident Notification and Reporting.....	10-5
11.0		Approval .....	11-1
	11.1	Original Plan.....	11-1
	11.2	Revisions .....	11-1

## Figures

7-1	Personnel Decontamination Line (Page 7-1)
10-4	Hospital Route Map (Page 10-4)
10-7	JV II Incident Reporting Process (Page 10-6)

## Tables

Table 1-1:	Activity Hazard Analysis (page 1-4)
Table 3-1:	Constituents of Concern (page 3-36)
Table 5-1:	Personnel Protective Equipment (page 5-1)
Table 6-1:	Air Monitoring Equipment Specifications (page 6-1)
Table 6-2:	Air Monitoring Equipment Calibration Specifications (page 6-2)

## Attachments

1	Employee Signoff Form
2	Subcontractor H&S Tracking Form
3	Project H&S Forms/Permits
4	Project Activity Self-Assessment Checklists
5	Drug Free Work Place Program
6	Material Safety Data Sheets
7	Chemical-Specific Training Form
8	Project-Specific Chemical Product Hazard Communication Form
9	Biological Hazard Fact Sheet
10	Activity Hazard Analyses (AHAs)
11	Pre-Task Safety Plan (PTSP)
12	Loss Prevention Observation (LPO) Form
13	Loss/Near Loss Incident Report Form
14	Emergency Contact List
15	Site Specific Accident Prevention Plan
16	Hurricane Preparedness Plan
17	Applicable H&S Program SOPs
18	Navy Region MidAtlantic Region Fire & Emergency Services Memorandum
19	COMNAVREG MIDLANT Instructions 11300.1



# Acronyms and Abbreviations

---

AHA	Activity Hazard Analysis
BBLPS	Behavior Based Loss Prevention System
CPR	Cardiopulmonary Resuscitation
CSE	Confined Space Entry
FA	First Aid
FFA	Federal Facility Agreement
FS	Feasibility Study
ft	feet
FUD	Formerly Used Defense
GFCI	ground fault circuit interrupter
H&S	Health and Safety
HAZWOPER	Hazard Waste Operations
HHRA	Human Health Risk Assessment
HR	heart rate
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDW	Investigation Derived Waste
IRA	Interim Removal Action
IRF	Incident Report Form
JV II	AGVIQ-CH2M HILL Joint Venture I
LOTO	Lock-Out and Tag Out
LPO	Loss Prevention Observation
MEC	Munitions of Explosive Concern
MSDS	Material Safety Data Sheet
NAVFAC	Naval Facilities Engineering Command
NLI	Near Loss Investigation
NSN	Naval Station Norfolk
NTR	Navy Technical Representative
PAHs	Polyaromatic Hydrocarbons
POC	Point of Contact
PPE	Personal Protective Equipment
PTSP	Pre-Task Safety Plan
RA	Removal Action
RAO	Remedial Action Objective
ROD	Record of Decision
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RMSF	Rocky Mountain Spotted Fever
ROICC	Resident Officer in Charge of Construction
SHSO	Site Health and Safety Officer
SOP	Standard of Practice
SWMU	Solid Waste Management Unit
SWO	Stop Work Order
UXO	Unexploded Ordnance
VOCs	Volatile Organic Compounds



# 1.0 Introduction

---

AGVIQ-CH2M HILL Joint Venture II (JV II) has been contracted by the United States Navy, Naval Facilities Engineering Command (NAVFAC), Southern Division, to perform a Removal Action (RA) at Site I, at Naval Station Norfolk, Norfolk, VA. This work will be performed under the terms and conditions Contract Number N62467-03-D-0260, Task Order 017.

All site personnel, including JV II and subcontractors, must review this Health and Safety Plan (HSP) and sign the Employee Signoff Form (Attachment 1). In addition, the Site Health and Safety Officer (SHSO) will provide a safety briefing for all visitors to the site.

## 1.1 Base Background

Naval Station Norfolk (NSN) is the largest naval base in the United States and is situated on 4,631 acres of land in the northwest portion of the City of Norfolk, Virginia. NSN is bounded on the north by Willoughby Bay, on the west by the confluence of the Elizabeth and James Rivers, and on the south and east by the City of Norfolk. A portion of the NSN eastern boundary is formed by Mason Creek. Various Installation Restoration sites are located at NSN, including Site 1, Camp Allen Landfill. This site, plus storm water flow are the principal activities that may have impacted ecological receptors in an adjacent drainage channel, Bousch Creek

NSN includes approximately 4,000 buildings, 20 piers, and an airfield. The western portion of NSN is a developed waterfront area containing the piers and facilities for loading, unloading, and servicing naval vessels. Land use in the surrounding area is commercial, industrial, and residential. The waterfront area south of the NSN provides shipping facilities for several large industries. A network of rail lines is located in the area to service nearby industries. Residential areas surround the NSN to the south and east. Willoughby Spit, a low-density residential area located northeast of the NSN, is also used for recreational activities.

## 1.2 Site 1 Background

Site 1, Camp Allen Landfill (CAL) is located in a developed area of the facility and bordered by Bousch Creek on the north, south, and west. The landfill consist of two primary areas, Area A (45-acre landfill) and Area B (2-acre disposal area). Various facilities are located on top of (e.g., Brig and heliport) and adjacent to the landfill areas. Residential communities lie to the west of Area A and to the south of both areas.

The Area A landfill was first developed in the early 1940s and was used until about 1974. Historically, Area A received municipal, solid and industrial wastes including general refuse, demolition debris, sludge from metal plating, parts cleaning, and paint stripping. Additionally, over age chemicals, chlorinated organic solvents; acids; caustics; paints and thinners; pesticides; asbestos; and incinerator ash were disposed of at this site. Area A is now covered and re-vegetated with grasses that are regularly mowed. Area A is essentially surrounded by portions of Bousch Creek.



Area B is east of Area A and is significantly smaller in size. This area received waste from a 1971 fire at the Camp Allen Salvage Yard (CASY). The residue and debris resulting from this fire were buried in trenches at Area B. A non-time critical removal action was conducted to remove the contaminated soil and debris from Area B. Drainage ditches to the north and east of Area B are connected to Bousch Creek via a culvert that runs under the CASY.

An ecological evaluation of Bousch Creek was completed. In the primary area, located in the upper reaches north of Camp Allen Landfill, it was determined that the sediment had been impacted primarily by metals. In a secondary area, located in the upper-middle reaches of Bousch Creek, although not associated with an IR Site, it was also determined that sediment had been impacted by polycyclic aromatic hydrocarbons (PAHs). This action shall provide for the removal of contaminated sediment in both areas.

### 1.3 General Task Order Scope of Work

The Scope of Work includes the removal of approximately 5,400 cubic yards of contaminated sediment, disposal, backfilling and restoration of the site. Based on the Draft EE/CA for the Upper Reaches of Bousch Creek, dated April 2007, the selected alternative provides primarily for the removal of metals contaminated sediment in the area located immediately north of the CALF. This shall consist of the removal of 2 feet of contaminated sediment in an area that is approximately 2400 linear feet by 30 feet wide in the Bousch Creek channel. Part of the excavation effort (+/- 800 lf) will include sediment excavation from a 12' deep vertically sided concrete "aqueduct". The excavated area would be backfilled with approximately 1 foot of clean fill and existing Tri-lock pavers would be installed to provide channel protection in the depositional area that is most likely to be maintained in the future (area (first 30 feet) outside of the Camp Allen Treatment Plant where ground water effluent discharges to Bousch Creek).

Additionally, the action shall consist of a sediment removal action around a single hot spot in a secondary area near the up gradient end of the Bousch Creek culvert. This action shall provide for a 10 ft radius by 2 ft deep removal of PAH contaminated sediment. The removal areas are identified in the Draft EE/CA for Upper Reaches of Bousch Creek (April 2007).

The general scope of work to be executed for this task order is approximately as follows:

- Utility clearance and land survey operations (pre-mobilization)
- Perform pre-mobilization waste characterization of materials to be removed and disposed from the site for the purpose of obtaining representative chemical analysis for securing off-site disposal facility approval.
- Mobilization and site preparation (temporary construction lay down and access road improvements).
- Installation of Erosion and Sediment Control Features based on the approved ESCP.
- Perform Land Clearing and Grubbing to facilitate RA activities.
- Placement of temporary water control devices to reduce/limit tidal and storm water run-off infiltration into the RA area
- Construction of a designated sediment/soil dewatering pad.



- Excavation, temporary staging, loading, transportation and disposal of identified sediment and soil/debris to predefined limits with dewatering operations (as may be necessary)
- Excavation of PAH “hot spot” areas dewatering operations (as may be necessary).
- Site restoration to include: delivery and placement of “clean” off-site fill material in the completed excavation limits and site grading, vegetative and canal embankment restoration.
- Demobilization operations.

## 1.4 HAZWOPER-Regulated Tasks

Where certain work tasks include the handling, removal, containment, investigation or other physical site management of hazardous waste/material or other regulated materials, execution of such tasks and the potential employee exposure to chemical hazards associated with these tasks may be regulated under 29CFR1910.120/29CFR1926.65. For this task order, following activities will be considered Hazardous Waste Operations (HAZWOPER)-regulated tasks because of the potential worker exposure to site contaminants:

- Perform pre-mobilization waste characterization of materials to be removed and disposed from the site for the purpose of obtaining representative chemical analysis for securing off-site disposal facility approval.
- Placement of temporary water control devices to reduce/limit tidal and storm water run-off infiltration into the RA area.
- Excavation, temporary staging (waste management), loading of identified sediment and soil/debris to predefined limits with dewatering operations (as may be necessary)
- Excavation of PAH “hot spot” areas dewatering operations (as may be necessary).
- Equipment decontamination.

## 1.5 Non-HAZWOPER-Regulated Tasks

Under specific circumstances, the training and medical monitoring requirements of federal or state HAZWOPER regulations are not applicable. It must be demonstrated that the tasks can be performed without the possibility of exposure in order to use non-HAZWOPER-trained personnel. The following tasks are considered to be non-HAZWOPER regulated because they should not cause exposure to site constituents of concern:

- Utility clearance and land survey operations
- Mobilization and site preparation (non intrusive activities).
- Installation of Erosion and Sediment Control Features (where ESCP installation is outside of potentially contaminated soil/sediment areas).
- Perform land clearing and grubbing to facilitate RA activities.
- Construction of a designated sediment/soil dewatering pad.
- Site restoration to include: delivery and placement of “clean” off-site fill material in the completed excavation limits and site grading, vegetative and canal embankment restoration.
- Demobilization

## 1.6 Hazard Analyses

The Table 1-1 summarizes the hazards associated with the project tasks. Refer to Section 3.0 for controls for the project hazards.



TABLE 1-1 ACTIVITY HAZARD ANALYSES

Potential Hazards	Project Activities										
	Utility & Land Surveys	Mobilization & Site Preparations (non intrusive only)	ESC Installation	Placement of Water Control Dams/Devices	Land Clearing & Grubbing	Pre-characterization Sampling	Sediment & PAH Hot Spot Waste Management and Loading of Sediment/Soil	Sediment Dewatering Operations	Decon. Operations	Backfilling or Other Site Restoration Operations	Demobilization
Adverse Weather	X	X	X	X	X	X	X	X	X	X	X
Biological	X	X	X	X	X	X	X	X	X	X	X
Buried Utilities			X	X	X	X	X				
Chainsaws/Brushcutters		X	X								
Chemical Hazard-Dermal/Inhalation						X	X	X	X		
Compressed Gas Cylinders											X
Concrete and Masonry											
CSE							X				
Cranes & Rigging (rigging only)		X		X	X		X	X			
Demolition											
Electrical Safety (HS-206)		X						X	X		X
Drilling (HS-204)											
Excavations (HS-307)			X	X	X	X	X	X			
Fire/Explosion Hazards							X				
Fire Prevention (HS-208)		X	X	X	X	X	X	X	X	X	X
Flight Line Awareness	X	X	X	X	X	X	X	X	X	X	X
Hand & Power Tools (HS-210)		X	X	X	X	X		X	X		X
Haul Truck Operations		X					X			X	X
Heat Stress/Cold Stress	X	X	X	X	X	X	X	X	X	X	X
Heavy Equipment ( HS-306)		X	X	X	X	X	X	X			
Housekeeping	X	X	X	X	X	X	X	X	X	X	X
Ladders & Stairs						X	X				
Lockout /Tagout											
Manual Lifting (HS-112)	X	X	X	X	X	X		X	X		X
Mechanical Guarding Hazards			X	X	X						
Material Handling Hazards		X	X	X	X	X	X				X
Noise (HS-108)	X	X	X	X	X	X	X	X	X	X	X
Pinch/Struck by		X	X	X	X	X	X	X		X	X
Pressure Washing/Equip Decon (HS-506)										X	
Pressurized Lines/Equipment			X	X	X		X			X	
Slips/Trips/Falls	X	X	X	X	X	X	X	X	X	X	X
Suspended Loads		X		X	X	X	X	X		X	X
Vehicle Traffic	X	X					X			X	
Visible Lighting	X	X	X	X	X	X	X	X	X	X	X
Welding and cutting											
Working over water											



## 2.0 Project Organization and Personnel

### 2.1 Employee Medical Surveillance and Training

The employees listed below are enrolled in a Comprehensive Health and Safety Program and meet state and federal hazardous waste operations requirements for 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training. Employees designated "SSC" have completed a 12-hour site safety coordinator course or equivalent, and have documented requisite field experience. An SSC with a level designation (D, C, B) equal to or greater than the level of protection being used must be present during all tasks performed in exclusion or decontamination zones. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. At least one FA-CPR designated employee must be present during all tasks performed in exclusion or decontamination zones. The employees listed below are currently active in a medical surveillance program that meets state and federal regulatory requirements for hazardous waste operations. Certain tasks (e.g., confined-space entry) and constituents of concern (e.g., lead) may require additional training and medical monitoring.

Pregnant employees are to be informed of and are to follow the procedures in JV II- SOP HS-120, *Reproduction Protection*, including obtaining a physician's statement of the employee's ability to perform hazardous activities before being assigned fieldwork.

Employee Name	Office	Responsibility	SSC/FA-CPR
Craig Miller	AGVIQ	JV II Program Manager	SC-HW, FA-CPR
Stephen Matney	AGVIQ	JV II Project Manager (overall)	SC-HW, FA-CPR
Ed Corack	CH2M HILL\VBO	JV II Project Engineer	SC-HW, FA-CPR
Rich Rathnow	CH2M HILL\ORO	JV II Health & Safety Manager	SC-HW, FA-CPR
Rob Lychalk	AGVIQ	JV II Site Supervisor	
Kathy Jewell	CH2M HILL\CCI	JV II SHSO	SC-C, SC-HW, FA-CPR
Glen Jackson	AGVIQ	JV II HSO/POC SHSO (alternate)	SC-B, SSC-HW, FA-CPR

### 2.2 Project Safety Responsibilities

The Project Manager has the overall responsibility for this project and will ensure that the requirements of the contract are attained in a manner consistent with this HSP and other contract-specific requirements. The Project Manager will coordinate with the Site Health and Safety Officer (SHSO) to ensure that the work is completed in a manner consistent with the HSP. The SHSO will be the main contact in any on-site emergency situation and will ensure off-site emergency agencies have been contacted prior to the start of work. The Health and Safety Manager (HSM) is responsible for formulating and reviewing the HSP and ensuring that the HSP is complete and accurate. The HSM also provides technical and administrative support for the JV II Health and Safety Program and will be available for consultation when required. Each employee is responsible for personal safety as well as the safety of others in the work area.



### 2.2.1 Key Safety Personnel

The following individuals share responsibility for health and safety at the site:

JV II Program Manager/Project Manager – AGVIQ	Craig Miller	757-318-9420 x25 757-531-6425 (cell)
JV II Deputy Program Manager – CH2M HILL	Michael Halil	904-777-4812 x233 904-219-6277 (cell)
JVII Project Manager (overall) -AGVIQ	Stephen Matney	757-318-9420 x17 757-544-2632 (cell)
JV II Project Engineer – CH2M HILL	Ed Corack	757-671-6215
JV II Health and Safety Manager – CH2M HILL	Richard Rathnow	865-483 9005 x 572 865-607-6734 (cell)
JV II Site Superintendent - AGVIQ	Rob Lychalk	757-544-0524 (cell)
JV II SHSO – AGVIQ	Kathy Jewell	216-534- (cell)
JV II HSO/POC – AGVIQ SHSO (alternate)	Glen Jackson	757-318-9420 x 12 757-644-8293 (cell)

The overall JV II Project Manager (hereinafter referred to as Project Manager) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the HS&E management process. The Project Manager has overall management responsibility for the tasks listed below. The Project Manager may explicitly delegate specific tasks to other staff, as described in sections that follow, but retains ultimate responsibility for completion of the following in accordance with this HSP.

- Include standard terms and conditions, and contract-specific HS&E roles and responsibilities in contract and subcontract agreements (including flow-down requirements to lower-tier subcontractors).
- Select safe and competent subcontractors by:
  - Obtaining, reviewing, and accepting or rejecting subcontractor pre-qualification questionnaires.
  - Ensuring that acceptable certificates of insurance, including JV II as named additional insured, are secured as a condition of subcontract award.
  - Including HS&E submittals checklist in subcontract agreements, and ensuring that appropriate site-specific safety procedures, training and medical monitoring records are reviewed and accepted prior to the start of subcontractor's field operations.
- Maintain copies of subcontracts and subcontractor certificates of insurance (including JV II as named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures in the project file accessible to site personnel.
- Provide oversight of subcontractor HS&E practices per the site-specific safety plan.



- Manage the site and interface with 3<sup>rd</sup> parties in a manner consistent with our contract and subcontract agreements and the applicable standard of reasonable care.
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented.

The Health and Safety Manager responsibilities include the following:

- Review and accept or reject subcontractor pre-qualification questionnaires that fall outside the performance range delegated to the Contracts Administrator (KA).
- Review and accept or reject subcontractor training records and site-specific safety procedures prior to start of subcontractor's field operations.
- Support the SHSO's oversight of subcontractor (and lower-tier subcontractors) HS&E practices and interfaces with on-site third parties per the HSP.

The SHSO is responsible for verifying that the project is conducted in a safe manner including the following specific obligations:

- Verify this HSP remains current and amended when project activities or conditions change.
- Verify JV II site personnel and subcontractor personnel read this HSP and sign Attachment 1 "Employee Signoff Form" prior to commencing field activities.
- Verify JV II site personnel and subcontractor personnel have completed any required specialty training (e.g., fall protection, confined space entry) and medical surveillance as identified in Section 3, and maintain the Subcontractor H&S Tracking Form (Attachment 2).
- Verify compliance with the requirements of this HSP and applicable subcontractor health and safety plan(s).
- Act as the project "Hazard Communication Coordinator" and perform the responsibilities outlined in this HSP.
- Act as the project "Emergency Coordinator" and perform the responsibilities outlined in this HSP.
- Verify that safety meetings are conducted and documented in the field logbook initially and as needed throughout the course of the project (e.g., as tasks or hazards change).
- Verify that project H&S forms and permits, found in Attachment 3, are being used as intended.
- Verify that Project Activity Self-Assessment Checklists, found in Attachment 4, are being used as intended.
- Implement the Drug-Free Work Place Program (Attachment 5).
- Verify that project files available to site personnel include copies of executed subcontracts and subcontractor certificates of insurance (including named additional insured), bond, contractor's license, training and medical monitoring records, and site-specific safety procedures prior to start of subcontractor's field operations.



- Manage the site and interface with third parties in a manner consistent with our contract/subcontract agreements and the applicable standard of reasonable care.
- Coordinate with the HSM regarding JV II and subcontractor operational performance, and third-party interfaces.
- Ensure that the overall, job-specific, HS&E goals are fully and continuously implemented.

The training required for the SHSO is as follows:

- 12-hour course Site Safety Coordinator (or equivalent).
- 40-hour OSHA 1910.120 training course and 8 hour refresher classes (as applicable).
- First Aid and CPR.
- Relevant Competent Person Courses (excavation, confined space, scaffold, fall protection, etc.)

The SHSO is responsible for coordinating with the JV II individual responsible for site operations and the Project Manager. In general, the Project Manager will contact the client. The Health and Safety Manager should be contacted by the Site Health and Safety Officer as appropriate.

## 2.3 JV Subcontractors

Subcontractors that may be covered by this HSP, must be provided a copy, or be briefed on the contents, of this HSP prior to initiating work on this site. However, this plan does not address hazards associated with the tasks and equipment that the subcontractor has expertise in (e.g., electrical, mechanical). Subcontractors are responsible for the health and safety procedures specific to their work, and are required to submit these procedures to JV II for review before the start of field work. It is critical that Subcontractors work be performed in a manner that is consistent with applicable OSHA standards, EM 385 1-1 or other established health and safety plan(s)/protocols. The JV II SHSO should verify that subcontractor employee training, medical clearance, and fit test records are current and must monitor and enforce compliance with the established plan(s). JV II oversight does not relieve subcontractors of their responsibility for effective implementation and compliance with the established plan(s), protocols or established safety regulations.

JV II should continuously endeavor to observe subcontractors' safety performance. This endeavor should be reasonable, and include observing for hazards or unsafe practices that are both readily observable and occur in common work areas. JV II is not responsible for exhaustive observation for hazards and unsafe practices. In addition to this level of observation, the SHSO is responsible for confirming JV II subcontractor performance against both the subcontractor's safety plan and applicable self-assessment checklists. Project Activity Self-Assessment Checklists contained in Attachment 4 are to be used by the SHSO to review subcontractor performance.

Health and safety related communications with JV II subcontractors should be conducted as follows:

- Brief subcontractors on the provisions of this plan, and require them to sign the Employee Signoff Form included in Attachment 1 of this HSP.



- Request subcontractor(s) to brief the project team on the hazards and precautions related to their work.
- When apparent conditions, actions or practices are observed that are not consistent with this HSP, JV II Health and Safety Program or other Health & Safety protocols, notify the subcontractor safety representative and require corrective action—the subcontractor is responsible for determining and implementing necessary controls and corrective actions.
- When identified conditions or practices that are not consistent with JV II H&S policies and procedures or industry standards are repeated or persist, notify the subcontractor safety representative and stop affected work until adequate corrective measures are implemented. See Stop Work Order (SWO) Form in Attachment 3.0 of this HSP.
- When an apparent imminent danger exists, immediately remove all affected JV II employees and subcontractors, notify subcontractor safety representative, and stop affected work until adequate corrective measures are implemented (see SWO form). Notify the Project Manager and HSM as appropriate.
- Document all oral health and safety related communications in project field logbook, daily reports, or other records.



## 3.0 Project-Specific Hazards

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Exposure to certain project hazards may include injury, accidents or illnesses from slip/fall, struckby/caught-in-between, noise or chemical exposure or other identified job site hazards. The intent of this section of the HSP is to facilitate employee awareness in the recognition of potential specific project and general site hazards that may be associated with the execution of assigned project tasks. All JV II are required to contact the HSM or designated JV II safety representatives identified in this HSP for any questions or concerns regarding the safe execution of this task order. The following information is intended to provide procedures and practices to be implemented on the job site that may reduce or eliminate project accidents, injuries, illnesses and property damage that may be associated with identified site hazards.

### 3.1 Adverse Weather

Sudden inclement weather can rapidly encroach upon field personnel. Field crew members performing work outdoors should carry clothing appropriate for bad weather. In severe weather conditions, (i.e., high wind or electrical storms), the field crews should leave the area and find safe shelter until the weather abates and until a decision is made to resume the field activities.

Preparedness and caution are the best defenses against lightning. Many lightning deaths and injuries happen before or after a thunderstorm's peak. The site manager or SHSO shall monitor weather forecasts for predictions of electrical storms in the area. At first sight of lightning, operations shall be stopped and only resumed when conditions permit. The site manager or SHSO shall monitor weather conditions to determine when it is appropriate to resume work. The lightning safety recommendation is 30-30: Seek refuge when thunder sounds within 30 seconds after a lightning flash; and do not resume activity until 30 minutes after the last thunder clap. Some other general precautions include:

- Know where to go and how long it will take to get there. If possible, take refuge in a large building or vehicle. Do not go into a shed in an open area.
- The inclination to see trees as enormous umbrellas is the most frequent and most deadly mistake. Do not go under a large tree that is standing alone. Likewise, avoid poles, antennae and towers.
- Stay away from lakes, streams, pools, or any water.
- Stay away from railroad tracks that can carry lightning charges for long distances.
- If the area is wide open, go to a valley or ravine, but be aware of flash flooding. Do not stand on top of a hill.
- If you are caught in a level open area during an electrical storm and you feel your hair stand on end, drop to your knees, bend forward and put your hands on your knees or crouch. The idea is to make yourself less vulnerable by being as low to the ground as possible and taking up as little ground space as possible. Lying down is dangerous, since the wet earth can conduct electricity. Do not touch the ground with your hands.
- Do not use telephones during electrical storms, except in the case of emergency.



## 3.2 Clearing and Grubbing - General

Site clearing operations for the project site will involve tree felling, brush removal and vegetation reduction operations. This activity will be executed within a limited area in the southwest corner of the remedial area. It is anticipated that land clearing shall be executed by the utilization of both mechanized heavy equipment and ground personnel. When appropriate, trees shall be felled by ground crews utilizing chain saws (or brush cutters for small diameter materials). The minimum Personal Protective Equipment (PPE) selection for site clearing operations shall be as follows.

- Long trousers, chainsaw chaps, and appropriate footwear (ANSI rated).
- ANSI Z87 approved eyewear with a face shield.
- A hardhat with the visor facing forward.
- Leather work gloves.
- Long-sleeved shirt.
- Ear muffs

Note: For land clearing operations, substitution of high visibility clothing should be considered where reflective/high visibility vests are normally utilized.

Trees and other removed vegetation will be consolidated to central processing areas via mechanized heavy equipment outfitted with sufficient material handling attachments. Felled trees and other removed vegetation shall be fed into and reduced via a large diameter wood chipper (+/-12"). Feeding of consolidated trees and vegetation shall be performed via the mechanized heavy equipment, to the extent possible.

Once clearing operations are substantially completed, grubbing may be initiated. Where grubbing operations are required, stumps shall be removed via mechanized heavy equipment (track excavator). Soil shall be removed from the stump root mass to the extent possible and left in place.

The following sections identify general safe work practices associated with land clearing operations.

### 3.2.1 Site Clearing - Tree Felling

The following safe work practices apply to personnel performing tree felling operations.

- Evaluate the tree(s) & the surrounding area for anything that may cause property damage or worker injury when the tree falls.
- Evaluate the shape of tree(s), lean of the tree and decayed or weak spots.
- Evaluate wind force and direction. Evaluate the location of people and other perceived hazards.
- Evaluate potential electrical hazards or damage to other utilities. If the potential exists, trees shall be topped to a height where the hazard is eliminated. Tree "topping" operations are to be performed qualified and experienced personnel only.



- Work area shall be routinely cleared to permit safe working conditions. An escape route shall be evaluated by each worker performing tree felling operation.
- Each worker shall be involved in tree felling operations shall be advised on their roles. All workers not directly involved in the operation shall be kept clear of the work area. Create sufficient buffer zone between non-essential ground support personnel and tree felling crew.
- Perform proper maintenance and inspection of all equipment to be utilized in the operation.
- All equipment to be operated and maintained by experienced and qualified operators/personnel.
- De-limb trees from base to top prior to “topping” trees.
- Use directional notching for tree felling (top cut ~60° angle to 20-25% tree diameter and bottom horizontal cut to meet termination point of top cut) before through-cutting of trunks/limbs.

#### 3.2.1.1 Aerial Lifts

In the event that specialized personnel are used to execute tree topping operations and aerial lifts are utilized to perform these operations, the following work practices shall be implemented.

- Only qualified operators (by training or experience) are permitted to operate aerial lifts.
- Inspect aerial lifts and test lift controls prior to use.
- Wear a full body harness with lanyard attached to the work platform. For scissors lifts where a standard guardrail system is installed and you are working within the confines of such a system, full body harness and lanyard are not required, but is recommended.
- Do not attach lanyard to any adjacent structures or equipment while working from an aerial lift.
- Stand firmly on the floor of the platform and do not sit or climb on the railings of the platform or use planks, ladders, or other devices to increase working height.
- Remain in the platform at all times and do not leave the platform to climb to adjacent structures.
- Position aerial lifts on competent, level surfaces, with the brakes set (if available). If outriggers are provided, position on solid surfaces or cribbing.
- Maintain safe clearance distances between overhead power lines and any part of the aerial lift or conducting material unless the power lines have been de-energized and grounded, or where insulating barriers have been installed to prevent physical contact. Maintain at least 10 feet from overhead power lines for voltages of 50 kV or less and provide additional separation from power transmission lines in excess of 50kV (see Electric Safety included in this HSP for required increase separation distances for power transmission lines in excess of 50 kV).
- Do not exceed the boom and basket load limits.
- Do not use aerial lifts as cranes.
- Do not work or stand below aerial lift operations.



- Do not use aerial lifts when winds exceed 30 miles per hour, but the operator must always evaluate with it is safe to operate an aerial winds where wind speeds are in excess of 5 mph.

### 3.2.2 Site Clearing - Chainsaws/Brushcutters

The following safe work operations apply to personnel using chainsaws/brushcutters.

- Ensure an Activity Hazard Analysis is written for this task.
- Verify that the owner's manual is available to personnel using equipment.
- Chainsaw operators perform daily or more frequent inspections and maintenance of equipment have inspected equipment. Inspections an maintenance based on chainsaw use as follows:
  - ⇒ No leaks, chain sharpening, oiling mechanism, inspection of chain integrity/tension, chain brake, throttle control, hand guard, chain catcher, carburetor idle, slack adjustment, stop control.
- Do not allow personnel to use chainsaws who do not have appropriate experience or training for the assigned tasks.
- Prohibit smoking while fueling or operating the saw. Refuel the saw only after it has cooled, and require funnel use. Make sure the fuel cap is secured and any fuel spillage is cleaned up. Move sufficient distance away from refueling area before restarting saw. Keep a fire extinguisher nearby. Transport and store fuel only in approved containers.
- Do not distract or disturb someone who is operating a chainsaw. Non essential ground personnel or other team members engaged in land clearing operations who must interface with personnel actively engaged in chainsaw use must first establish eye contact with the operator and signal (via hand) that they would like to approach the drop zone. Both the chainsaw operator and ground personnel must assess that it is safe to enter the drop zone.
- Implement proper work break regiments, heat stress monitoring and fluid intake for personnel operating chainsaws/brushcutters. If they become tired or overheated, ensure they are examined for heat stress – refer to information regarding heat stress monitoring and treatment.
- Ensure personnel operating chainsaws after work completion.
- Working from heights (ladder, aerial lift, back of trucks) requires additional planning and must be approved by the Health and Safety Manager.
- Review Biological Hazard fact sheets contained in Attachment 9 of this document. Use appropriate insect repellents, as applicable.

### 3.2.3 Site Clearing -Chippers

- Mechanical chippers must be maintained in accordance with the manufacturer's specifications.
- The motor ignition shall be locked out and the key removed from the ignition before any maintenance or service is performed, or when the chipper is left unattended.



- The chipper drum shall be blocked, and only authorized persons allowed to perform any service or maintenance.
- On the drum or blades, retightening of chipper blade bolts shall be done according to manufacturer's specifications.
- The chipper shall be equipped with a workable "kill" switch of approved design located at the in feed location.
- The chipper shall have a curtain in place at all times (workable in all weather conditions, in order to prevent fly-back of material).
- Before the wood chipper is started, the apron and feed platform should be checked and cleared of any foreign objects.
- The front of the feed apron table shall be a minimum of 1500 mm (60 inches) from the chipper blades.
- Hands or feet shall not be placed beyond the curtain guard while the blade is in operation.
- A "push stick" shall be used to force shorter or thorny brush into the chipper.
- Care shall be exercised when chipping dead or frozen wood in order to avoid kickback.
- Maximum diameter of material to be fed into the chipper shall be 150 mm (6 inches), unless manufacturer's specifications allow larger material size.
- Material from 75 mm to 150 mm (3 to 6 inches) diameter shall not exceed 2.5 meters (8 feet) in length, unless manufacturer's specifications allow longer material length.
- The person feeding the chipper shall stand to the side of the apron at the rear of material being fed into the machine.
- No person shall be allowed to stand or sit on any part of the discharge chute while the brush chipper is in operation.
- No person shall stand or sit on any part of the brush chipper while it is in operation or while it is being transported from one job site to another.
- The chipper apron is to be secured in the "up" position when being transported from one job site to another.

### **3.2.4 Machine Guarding**

- Ensure that all machine guards are in place to prevent contact with drive lines, belts, chains, pinch points or any other sources of mechanical injury.
- Unplugging jammed equipment will only be performed when equipment has been shut down, all sources of energy have been isolated, and equipment has been locked/tagged/blocked and tested.
- Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires lockout of that equipment prior to work.



### 3.3 Cranes

(Reserved)

### 3.4 Demolition

(Reserved)

### 3.5 Drilling Safety

(Reserved)

### 3.6 Electrical Safety

Where electrical exposure hazards are possible in the work environment, the following safe work practices must be implemented.

- Only qualified personnel are permitted to work on unprotected energized electrical systems.
- Do not tamper with electrical wiring and equipment unless qualified to do so. All electrical wiring and equipment must be considered energized until hazardous energy control procedures (i.e. lock-out/tag-out) are implemented.
- Inspect electrical equipment, power tools, and extension cords for damage prior to use. Do not use defective electrical equipment, remove from service.
- All temporary wiring, including extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.
- Extension cords must be:
  - Equipped with third-wire grounding.
  - Covered, elevated, or protected from damage when passing through work areas.
  - Protected from pinching if routed through doorways.
  - Not fastened with staples, hung from nails, or suspended with wire.
- Electrical power tools and equipment must be effectively grounded or double-insulated UL approved.
- Operate and maintain electric power tools and equipment according to manufacturers' instructions.
- Maintain safe clearance distances between overhead power lines and operating heavy equipment unless the power lines have been verified as being de-energized and grounded or where insulating barriers have been installed to prevent physical contact. To determine proper clearance from energized overhead electric lines, please consult the reference table below.



<b>Proper Separation from Power Transmission Lines</b>	
Nominal System Voltage	Minimum Rated Clearance
0-50 kV	10 ft
51 - 200 kV	15 ft
201 - 300 kV	20 ft
301 - 500 kV	25 ft
501 - 750 kV	35 ft
751 - 1000 kV	45 ft

- Temporary lights will not be suspended by their electric cord unless designed for suspension. Lights will be protected from accidental contact or breakage.
- Protect all electrical equipment, tools, switches, and outlets from environmental elements.

### 3.6.1 Control of Hazardous Energy

(Reserved)

## 3.7 Excavation Activities

- Determine the applicability of 29 CFR 1926, Subpart P, Excavations and EM 385 1-1, Section 25, Excavations.
- JV II personnel must follow all excavation requirements established by the competent person.

Note: A competent person is an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and, who has authority to take prompt corrective measures to eliminate them.

- The competent person must inspect the excavation every day and everyday after a hazard increasing event. Documentation of this inspection must be maintained on site at all times.
- JV II personnel must notify and be granted authorization from the excavation-competent person prior to entering any excavation. JV II personnel must follow all excavation requirements established by the competent person.
- Each employee in an excavation must be protected from cave-ins by adequate protective systems designed in accordance with applicable OSHA standards (i.e. Design of Sloping and Benching Systems and Design of Support Systems, Shield Systems and other Protective Systems) except when
  - 1) excavations are made entirely in rock;



- 2) excavations are less than 5 feet (1.52m) in depth and examination of the ground by a competent person provides there is no indication of cave-in.
- Prior to excavating at a location, buried utilities in the area must be identified; refer to “Procedures for Locating Buried Utilities”, included herein in this HSP.
- JV II personnel must not enter any excavation where protective systems are deficient at any time, for any reason. The competent person must be notified of such conditions.
- PPE and air monitoring requirements shall be executed in accordance with Sections 5.0 and 6.0, respectively, of this HSP in an effort to minimize potential dermal and respiratory exposures to identified site contaminants of concern during site excavation operations. In addition, good personal hygiene practices and procedures must be maintained (see section 7.0 of this HSP).

### 3.7.1 Confined Space Entry

There may be certain situations where employees encounter non-permit or permit required confined spaces during the execution of the project work and therefore should be familiar and trained to manage these conditions. The information contained below is intended to provide a general understanding of confined space hazard recognition such that encountering these conditions can be managed without accident or injury to JV II or subcontractor personnel.

A confined space:

- (1) Is large enough and so configured that an employee can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
- (3) Is not designed for continuous employee occupancy.

A Non-permit confined space means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

A portion of the sediment to be managed under the Task Order 017 RA (~ 25%) shall be excavated from a +/- 800' long x ~ 10' deep x ~ 30' wide, vertical walled concrete “aqueduct” type drainage canal. It is not anticipated that efficient removal of the sediment can be achieved from the aqueduct embankment using only a typical long reach track excavator. To execute sediment removal in the aqueduct, large rubber track skid steer loaders will be used to remove and transport sediment to load out areas from within the limits of aqueduct. Because of the open air natural and natural ventilation that is attributed to the aqueduct portion of the drainage canal, it is not anticipated that personnel working within the limits of the aqueduct will have to do so under as a Permit Required Confined Space entry condition.

However, as part of the sediment removal operations in the drainage canal, routine worker breathing zone (BZ) air monitoring shall be conducted. In the event that air monitoring



results exceed established action levels, the workers must evacuate the work area. Where established action levels are exceeded, then sediment removal operations within the aqueduct portion of the drainage canal shall then be considered a "Permit Required Confined Space" until such time that the space may be reclassified as a Non permit Required Confined Space, in accordance with the conditions of 29CFR1910.146. A Permit-Required Confined Space (permit space) means a confined space that has one or more of the following characteristics:

- (1) Contains or has a potential to contain a hazardous atmosphere;
- (2) Contains a material that has the potential for engulfing an entrant;
- (3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross- section; or
- (4) Contains any other recognized serious safety or health hazard.

Before entering a permit-required confined space, the use of a permit-required confined space program must be enacted. This program is the JV II's overall program for controlling, and, where appropriate, protecting employees from, permit space hazards and for regulating employee entry into permit spaces. In general, components of a confined space program to be exercised for this project, if necessary, shall include the following:

- Personnel entering a permit required confined space must have completed confined space entry training.
- Prior to entry, a confined space permit must be completed identifying entry requirements. Entrants must review the permit prior to each entry to verify the requirements have been satisfied. A designated permit required confined space entry attendant must be present.
- The atmosphere in the space must be tested with air monitoring equipment. JVI personnel must confirm the test results are consistent with acceptable entry conditions.
- Mechanical ventilation (portable blower) shall be applied to the space when these atmospheric conditions are not met during entries. Re-entry may only occur when the above atmospheric conditions are met and mechanical ventilation is continuously applied to maintain these conditions.
- Personnel entering confined spaces that requires respiratory protection must have completed respiratory protection training in the Basic Program, received a respirator fit test and completed respirator wearer medical surveillance.
- A space classified by the employer as a permit-required confined space may be reclassified as a non-permit confined space under the following procedures:
  - If the permit space poses no actual or potential atmospheric hazards and if all hazards within the space are eliminated without entry into the space, the permit space may be reclassified as a non-permit confined space for as long as the non-atmospheric hazards remain eliminated.



- If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed under conditions of a permit required confined space. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.
- JV II shall document the basis for determining that all hazards in a permit space have been eliminated, through a certification that contains the date, the location of the space, and the signature of the person making the determination. The certification shall be made available to each employee entering the space or to that employee's authorized representative.
- If hazards arise within a permit space that has been declassified to a non-permit space, each employee in the space shall exit the space. The JV II shall then reevaluate the space and determine whether it must be reclassified as a permit space, in accordance with other applicable provisions of this section.

Where it is determined that JV II personnel must enter a confined space or permit required confined space, they are required to contact their supervisor such that verification can be made that the individual(s) performing the task have received the proper training and appropriate engineering controls are made available. Refer to SOP # 203 - "Confined Space Entry" (See Attachment 17) for more specific details on confined space entry requirements.

### **3.7.2 Work Adjacent to Railway Easements**

During approximately 20% of the removal sediment operations, it is anticipated that JV II personnel and designated equipment will be within and working parallel to an active Norfolk and Portsmouth Beltline line/easement. During this operation, JV II personnel and equipment will be positioned to 50' from and parallel to the centerline of the of the rail line. In addition, during sediment removal operations in the aqueduct portion of the drainage canal, track skid steer loader equipment will need to pass under the existing rail track overpass/support structure. Based on preconstruction discussions with Norfolk Southern railroad and the ROICC it is not anticipated that JV II personnel will be required to receive railroad/track safety awareness training to perform their assigned tasks while the above work conditions prevail. In addition, it is JV II's understanding that the trains that access the adjacent rail lines do so at "slow speeds". For project operations that meet the above conditions, the following measures will apply.

- All JV II personnel and subcontractors working in the vicinity of the Norfolk and Portsmouth Beltline (railroad) shall wear reflective vests.
- JV II equipment operators shall not cast excavated sediment onto the embankment that is adjacent to the rail line.
- JV II equipment operators shall limit swinging equipment booms toward the rail line easement.
- JV II ground personnel and personnel operating equipment in the aqueduct portion of the drainage canal shall not pass under the rail track overpass/support structure where a train passage is occurring. When personnel or equipment must pass under the rail track overpass/support structure to execute sediment removal operations, a spotter must be available, at a safe location away from the easement, at a position where the



spotter can warn equipment operators within the aqueduct that a train is oncoming. This warning (designated hand signal, flag or air horn) shall serve as a signal, to equipment operators positioned in the aqueduct, that passage underneath the rail track overpass/support structure shall cease until the train has passed.

- In the event that Norfolk and Portsmouth Beltline determines that worker rail line safety awareness training is required for personnel working the above conditions, the JV II Project Manager, other designee, shall arrange for such training.

### **3.7.3 Stairways and Ladder Use**

It is anticipated that during sediment removal operations JV II site personnel will need to use ladders to provide sufficient access and egress into and from the aqueduct portion of the drainage canal system. When JV II personnel or subcontractor's must use ladders or access stairways when performing assigned work tasks the following procedures must be considered for implemented.

- Stairway or ladder is generally required when a break in elevation of 19 inches or greater exists.
- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel must not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.
- Ladders must be inspected by a competent person for visible defects prior to each day's use. Defective ladders must be tagged and removed from service.
- Ladders must be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- User must face the ladder when climbing; keep belt buckle between side rails
- Ladders shall not be moved, shifted, or extended while in use.
- User must use both hands to climb; use rope to raise and lower equipment and materials
- Straight and extension ladders must be tied off to prevent displacement
- Ladders that may be displaced by work activities or traffic must be secured or barricaded
- Portable ladders must extend at least 3 feet above landing surface
- Straight and extension ladders must be positioned at such an angle that the ladder base to the wall is one-fourth of the working length of the ladder
- Stepladders are to be used in the fully opened and locked position
- Users are not to stand on the top two steps of a stepladder; nor are users to sit on top or straddle a stepladder
- Fixed ladders  $\geq$  24 feet in height must be provided with fall protection devices.
- Fall protection must be considered when working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.



See Attachment 17 of this HSP, SOP #214 Stairways and Ladders for more information regarding proper use of Stairways and Ladders.

### 3.8 Fire Prevention

- Be cognizant of and adhere to NSN Fire Prevention Procedures and Requirements. Review and follow applicable requirements of Navy Region MidAtlantic Region Fire & Emergency Services Memorandum and regarding “Construction Site Fire Prevention Guidelines” (see Attachment 18).
- Secure a “hot work permit” from the designated NSN Fire Department Official. This task shall be the sole responsibility of the JV II individual responsible for site activities or SHSO. JV II individual responsible for site activities or SHSO shall review established NSN hot work procedures and appropriate emergency contact requirements with the designated NSN Fire Department and review this information with all site JV II and applicable subcontractor personnel.
- Fire extinguishers will be provided so that the travel distance from any work area to the nearest extinguisher is less than 100 feet. When 5 gallons or more of a flammable or combustible liquid is being used, an extinguisher must be within 50 feet. Extinguishers must:
  - Be maintained in a fully charged and operable condition.
  - Be visually inspected each month.
  - Undergo a maintenance check each year.
  - The area in front of extinguishers must be kept clear.
- Post “Exit” signs over exiting doors, and post “Fire Extinguisher” signs over extinguisher locations.
- Combustible materials stored outside should be at least 10 feet from any building.
- Solvent waste and oily rags must be kept in a fire-resistant, covered container until removed from the site.
- Flammable/combustible liquids must be kept in approved containers, and must be stored in an approved storage cabinet.

### 3.9 Flight Line and Taxi-way Areas

At one point during the canal sediment removal operations, JV II personnel may be approximately 100’ north of the NSN runway. Based on preconstruction conversations with ROICC office and the NSN Airfield Manager, JV II and subcontractor personnel are not required to special airfield or flight line awareness training to execute this task order. However, due to the potential close proximity to the active flight line that JV II personnel may be operating, the following procedures must be implemented.

- Specific authorization is always required for personnel accessing flight line operations. JV II may not ever access these areas unless specific authorization (usually in the form of a pass and/or a designated escort) is secured. If access to flight line or taxiway areas is required, the JV II PM shall contact appropriate NSN POC



- Restricted areas, particularly on a military installation, are strictly enforced. They are usually outlined with a red line and often have certain "Entry Control Points" or "Restricted Access Area" painted along the red line where entry into the area is permitted. Entry into the restricted area without permission may subject the workers to arrest.
- Always assume that the airfield is active.
- When working adjacent to active run-ways particular importance must be paid securing loads, material, waste/debris or trash such that Foreign Object Damage (FOD) does not occur to NSN aircraft.
- Prior to the start of field operations, confirm with the NSN airfield manager that identification visual warning devices (i.e. orange and white checkered flags, flashing amber beacons, cones and/or barricades) is not required for haul trucks or excavation equipment working adjacent to the flight line.
- Night time work will not be permitted.
- It is inherent upon JV II personnel to be visible to everyone operating on the airfield. Acceptable should be in good condition and clearly visible.
- Vehicle speed on any access or haul roads adjacent to active airfield taxi ways or flight lines must be minimized to ensure limit the generation of air bourn dust/particle.
- There are safety areas around runways on the airfield. All equipment and materials must be stored behind these areas. If a crew working on/or adjacent to the runway is instructed to clear the runway, all workers and equipment must be moved beyond the safety area until given clearance by the control tower (or other authorized POCs) to return to the work area.

### 3.10 Hand and Power Tools

- Tools will be inspected prior to use, and damaged tools will be tagged and removed from service.
- Hand tools will be used for their intended use and operated in accordance with manufacturer instructions and design limitations.
- Maintain all hand and power tools in a safe condition.
- Do not set power tools down in muddy or wet areas which may damage the tool and/or create a potential for electric shock.
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool.
- Do not carry or lower a power tool by its cord or hose.
- Portable power tools will be plugged into GFCI-protected outlets; and
- Portable power tools will be UL listed and have a three-wire grounded plug or be double insulated.



- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters).
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof, etc.).
- When using a knife or blade tool, stroke or cut away from the body with a smooth motion. Be careful not to use excessive force that could damage the tool, the material being cut or unprotected hands.
- Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

### 3.11 Haul Trucks

It is anticipated that the use of haul trucks will be utilized in the following capacity: 1) delivery of products or materials to be incorporated into the project (i.e. construction materials, common fill), 2) transfer of excavated soil/sediment to the designated staging/load-out area and 3) transportation of approved waste material to designated disposal or recycling facilities. Where haul trucks are utilized on the project, the following safe work practices shall be considered. Proposed project haul routes are identified in the Remediation Action Work Plan (RAWP).

- Haul truck operators used for the off-site transportation of approved waste material shall not exit their vehicles while positioned in the designated loading areas or while in the site "exclusion zone".
- Haul truck operators should not enter the dump body of their truck once it is filled with waste soil/sediment nor should they have direct contact with these materials.
- Haul truck operators should be familiar with their equipment and inspect all equipment before use.
- Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm.



- Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots.
- Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the equipment operator.
- Haul roads should be sufficiently wide (at least 50% of the width of the equipment on both sides of road) and equipped with reflectors to indicate access points.

## 3.12 Heavy Equipment

It is anticipated that heavy equipment (excavators, loaders, and haul trucks) will be used in virtually all phases of operation during the execution of this task order. When heavy equipment is utilized on-site the following procedures will be followed:

- JV II authorizes only those employees qualified by training or previous experience to operate heavy equipment.
- An Earthmoving Equipment Operator Evaluation Form will be completed and maintained in the project files by the SHSO for all persons who operate heavy equipment (Attachment 3).
- Equipment must be checked at the beginning of each shift to ensure the equipment is in safe operating condition and free of apparent damage. The check should include: service brakes, parking brakes, emergency brakes, tires, horn, back-up alarm, steering mechanism, coupling devices, seat belts and operating controls. All defects will be corrected before the equipment is placed in service.
  - Documentation of this inspection must be maintained on-site at all times. (See Attachment 3).
  - Refer to the Equipment Inspection Form found in Attachment 3 of this document.
- Equipment must be on a stable foundation such as solid ground or cribbing; outriggers are to be fully extended.
- Equipment must not be used to lift personnel; loads must not be lifted over the heads of personnel.
- Equipment, or parts thereof, which are suspended must be substantially blocked or cribbed to prevent shifting before personnel are permitted to work under or between them. All controls will be in a neutral position, with the motors stopped and brakes set.
- Equipment that is operating in reverse must have a reverse signal alarm distinguishable from the surrounding noise or a signal person when the operator's view is obstructed.
- When equipment is used near energized power lines, the closest part of the equipment must be at least 10 ft from power lines < 50 kV. For additional equipment clearances of power transmission lines in excess of 50 kV, please refer to, Electrical Safety included in this HSP.
- A person must be designated to observe clearances and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by



visual means. All overhead power lines must be considered to be energized until the electrical utility authorities indicate that it is not an energized line and it has been visibly grounded.

- Underground utility lines must be located before excavation begins; refer to the “Procedures for Locating Buried Utilities” included in this HSP.
- Operators loading/unloading from vehicles are responsible for seeing that vehicle drivers are in the vehicle cab or in a safe area.
- The parking brake will be set whenever equipment is parked; wheels must be chocked when parked on inclines.
- When not in operation, the blade/bucket/forks/auger etc must be blocked or grounded; the master clutch must be disengaged when the operator leaves the cab or is not utilizing equipment controls. When equipment is unattended, power must be shut off, brakes set, blades/buckets/forks etc. landed and shift lever in neutral.

### 3.13 Manual Lifting

- JV II personnel should notify supervisors or designated safety representatives of pre-existing medical conditions that may be aggravated or re-injured by lifting activities, such that the JV II may evaluate safe operational procedures with regard to the required task.
- Proper lifting techniques (use of knees and not back) must be used when lifting any object:
  - Plan storage and staging to minimize lifting or carrying distances.
  - Split heavy loads into smaller loads.
  - Use mechanical lifting aids whenever possible.
  - Have someone assist with the lift – especially for heavy (>50 lbs.) or awkward loads. Note: If JV II personnel are not capable of lifting 50 lbs. seek assistance from a team member to split the load.
  - Make sure the path of travel is clear prior to the lift.

### 3.14 Noise

Unprotected exposure to excessive noise levels may lead to gradual and permanent hearing loss. The greater the intensity of a noise and the longer a person is exposed to the noise, the greater the chance of hearing loss. A hearing loss can be permanent or temporary. After certain noise exposures, a person may experience a temporary threshold shift (hearing loss) that results in the inability to hear certain sounds. The ability to hear will usually return. However, repeated or intense noise exposure can prevent this recovery, resulting in permanent hearing loss.

Each employee is responsible for the following tasks:

- Notify the SHSO of high-noise-level areas.
- Wear hearing protection when required.



- Complete noise training and audiometric testing (as required).
- Hearing protection is required in work environments exceeding 85 dB.
- Hearing protection will be worn when operating heavy equipment and when working in close proximity to high-noise sources. At a minimum, hearing protection will be worn when the JV II personnel are engaged in or in close proximity to the following operations:
  - general heavy equipment operations (including mechanical screening plant)
  - land clearing operations
  - off-site fill delivery (haul trucks)

### 3.15 Pressure Washing Operations

Pressure washing operation may occur prior to final demobilization of materials and equipment from the site. Where pressure washing operations are required, the following safe work practices must be implemented.

- Only trained, authorized personnel may operate the high-pressure washer.
- Rinse waste from pressure washing operations must be collected and properly disposed of.
- Follow manufacturer's safety and operating instructions.
- Inspect pressure washer before use and confirm deadman switch fully operational
- The wand must always be pointed at the work area.
- The trigger should never be tied down
- Never point the wand at yourself or another worker.
- The wand must be at least 42 inches from the trigger to the tip.
- The operator must maintain good footing.
- Non-operators must remain a safe distance from the operator.
- No unauthorized attachment may be made to the unit.
- Do not modify the wand.
- All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.
- Rain gear (disposal coated chemical suits for Hazwoper operations), 16-inch-high steel-toed rubber boots, safety glasses, hard hat with face shield, and inner and outer nitrile gloves should be worn, at a minimum.



## 3.16 Sample Handling

Sample handling, packaging, and preservation will be conducted in support of field activities to further characterize site conditions (sediment, soil or water), or waste materials generated during the execution of the task order. Employee safe work practices and procedures to be followed during these activities include:

- Skin contact with water, soil, sediment or debris of undetermined chemical characterization shall be avoided at all times.
- PPE and Air Monitoring requirements shall be executed in accordance with Sections 5.0 and 6.0, respectively, of this HSP to minimize potential dermal and respiratory exposures to identified site contaminants of concern while conducting sample collection or characterization of potentially contaminated media (soil, water, drilling fluids/cuttings, PPE, soil vapor etc.). In addition, good personal hygiene practices and procedures must be maintained (see section 7.0 of this HSP).
- Caution should be exercised when filling bottles containing acid or base preservatives. Both liquid and vapor phases of acid can cause severe burns.
- Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents. Sample activities, sample collection, and equipment decontamination procedures.
- JV II personnel performing sampling activities shall follow PPE requirements identified by section 5.0 of this HSP.

### 3.16.1 IDW Drum Handling or Sampling

During the execution of the contract, various types and quantities of Investigation Derived Waste (IDW) will be generated and may include, but not be limited to, PPE, spent sampling materials, decontamination fluids or other residual materials/debris generated during the execution of the project. Personnel are permitted to handle and/or sample drums containing investigation-derived waste (IDW) only, as handling or sampling other drums requires a plan revision or amendment approved by the JV II HSM. The following control measures will be taken when managing drums containing IDW:

- Minimize transportation of drums or other containers with IDW.
- Sample only labeled drums or drums known to contain IDW. Unknown drums or drums that show evidence of excessive buckling/bulging, corrosion, vapors, crystallization, unusual discoloration or other abnormalities may not be sampled without the evaluation of engineering controls, proper PPE air monitoring equipment and the use properly trained personnel familiar with the sampling of unknown drum contents.
- Use caution when sampling bulging or swollen drums. Relieve pressure slowly and step away from the drum as pressure is being released.
- If drums contain, or potentially contain, flammable materials, use non-sparking (i.e. brass) tools to open the drum.



- Picks, chisels, and firearms may not be used to open drums.
- Reseal bung holes or plugs whenever possible.
- Avoid mixing incompatible drum contents.
- Sample drums without leaning over the drum opening.
- Transfer the content of drums using a method that minimizes contact with material.
- PPE and Air Monitoring requirements shall be executed in accordance with Sections 5.0 and 6.0, respectively, of this HSP in an effort to minimize potential dermal and respiratory exposures to identified site contaminants of concern. In addition, good personal hygiene practices and procedures must be maintained (see section 7.0 of this HSP).
- Spill-containment procedures specified in Section 10 must be appropriate for the material to be handled.

### 3.17 Survey Lasers

- Do not point laser light/beams or reflective materials (prisms etc.) in the direction of the flight line.
- Laser beams used in surveying may be hazardous to the eyes. Personnel using survey lasers should receive some type of awareness training to mitigate eye hazards associated with survey instrumentation.
- The severity of the hazard depends on the type of laser and its power.
- Lasers used in surveying are usually low power; however workers shall avoid direct eye contact with the beam. This is most important when wearing corrective eyeglasses, which can intensify the beam's focus on the retina.
- Lasers must be posted with safety warning signs (i.e. manufacturer posting on the instrument or in operation manual).

### 3.18 Unknown or Unanticipated Buried Objects

Where unknown or unanticipated buried objects (i.e. drums, tanks, cylinders) are encountered during site operations, ongoing activities shall be immediately suspended. JV II or subcontractor personnel encountering unknown or unanticipated buried objects shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area, 3) immediately notify the site manager of the encountered condition and 4) not provide additional disturbance or otherwise handle the buried object. The individual responsible for site operations or SHSO shall contact the Project Manager and HSM to evaluate potential hazards associated with the specific situation encountered. The project team will then address the need for the use of special procedures, engineering controls, PPE or specialized subcontract personnel to safely mitigate the situation.

### 3.19 MEC/MPP Support

(Reserved)



## 3.20 (Exposure to) Vehicular Traffic

The following precautions must be taken when working around traffic, and in or near an area where traffic controls have been established:

- Exercise caution when exiting traveled way or parking along street – avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Eye protection should be worn to protect from flying debris.
- Remain aware of factors that influence traffic-related hazards and required controls – sun glare, rain, wind, flash flooding, limited sight-distance, hills, curves, guardrails, width of shoulder (i.e., breakdown lane), etc.
- Always remain aware of an escape route -- behind an established barrier, parked vehicle, guardrail, etc.
- Always pay attention to moving traffic – never assume drivers are looking out for you.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, a “buddy system” should be used, where one worker is looking toward traffic.
- Work area should be protected by a physical barrier – such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect your work area. Traffic control devices should: 1) convey a clear meaning, 2) command respect of road users, and 3) give adequate time for proper traffic response. The adequacy of these devices is dependent on limited sight distance, proximity to ramps or intersections, restrictive width, duration of job, and traffic volume, speed, and proximity.
- Where work is being performed in an active roadway, either a barrier or shadow vehicle must be positioned a considerable distance ahead of the work area. The vehicle should be equipped with a flashing arrow/message board. Other work/support vehicles which must remain positioned in an active roadway that is part of a designated work area should also have an orange flashing hazard light on top of the vehicle.
- Except on highways, flaggers should be used when 1) two-way traffic is reduced to using one common lane, 2) driver visibility is impaired or limited, 3) project vehicles enter or exit traffic in an unexpected manner, or 4) the use of a flagger enhances established traffic warning systems.
- Lookouts should be used when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns



workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

In addition to the above safe work practices, JV II personnel and JV II subcontractors shall adhere to the following procedures while operating motor vehicles or other motorized equipment on military/government facilities.

- Always using a seat belt while driving on military/government facilities,
- Always observe posted speed limits, traffic signs and signals.
- Never using a cell phone or two way radio while driving on military/government facilities.

Violating these rules may result in loss of military/government facility driving privileges.

### 3.21 Visible Lighting

Site work should be performed during daylight hours whenever possible. Work conducted during hours of darkness (including dusk and dawn) requires the set-up of supplemental lighting equipment. (Note: A general “rule of thumb” is that the illumination intensity must be sufficient to read a newspaper without difficulty.). The following chart provides a reference for illumination requirements for various construction related work environments.

Illumination (Foot Candles)	Illumination (Lux)	Area of Operation
5	~ 55	General construction area lighting.
3	~ 33	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	~ 55	Indoors: warehouses, corridors, hallways, and exit ways.
5	~ 55	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading)
10	~ 108	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls and indoor toilets and workrooms.)
30	~ 323	First aid stations, infirmaries, and offices.

#### NOTES:

- A **footcandle** is a unit of illumination on a surface that is everywhere one foot from a point source of one candle.



- A **lux** is a unit of measurement of the intensity of light. It is equal to the illumination of a surface one meter away from a single candle.

### CONVERSIONS

Foot Candles (FC) = Lux x .0929

LUX = Footcandles x 10.76 - (i.e.: 50 FC = 538 LUX)

The following safe work practices shall be considered with regard to lighting in the work place.

- Do not enter poorly lit areas without first providing portable illumination.
- Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.

## 3.22 Working Around Material Handling Equipment

- Never approach operating equipment from the rear. Always make positive contact with the operator, and confirm that the operator has stopped the motion of the equipment.
- Never approach the side of operating equipment; remain outside of the swing and turning radius.
- Maintain distance from pinch points of operating equipment.
- Because heavy equipment may not be equipped with properly functioning reverse signal alarms, never turn your back on any operating equipment.
- Never climb onto operating equipment or operate contractor/subcontractor equipment.
- Never ride contractor/subcontractor equipment unless it is designed to accommodate passengers, equipped with firmly attached passenger seat.
- Never work or walk under a suspended load.
- Never use equipment as a personnel lift; do not ride excavator buckets or crane hooks.
- Always stay alert and maintain a safe distance from operating equipment, especially equipment on cross slopes and unstable terrain.

### 3.22.1 Rigging

Rigging may be employed during the execution of this task order for the unloading of or placement of materials to be incorporated into the project. Where rigging equipment is required on the project, the following safe work practices shall be applicable.

- All rigging equipment must be inspected by a competent person prior to use for signs of excessive wear; equipment found to be damaged will be tagged and removed from service.



- Only one person shall signal the equipment operator during material handling/lifting operations. This person shall be thoroughly familiar with all of the cranes operation and be able to communicate with the crane operator with the appropriate hand signals.
- Suspended loads will not pass over workers at any time. Site personnel are prohibited from passing under suspended loads.
- Rigging use, maintenance and inspection shall be performed in accordance with the applicable standards of 29CFR1926.250 and Army Corps of Engineers Manual EM 385 1-1, section 15, Rigging, which ever is more stringent.
- Only load rated (tagged or labeled) rigging shall be utilized on JV II projects. User shall familiarize themselves with design load rate capacities (i.e. vertical, basket/cradle or choker applications) for the selected rigging.
- Tag lines shall be attached to every load being lifted.
- Tag lines will be used for all suspended loads so that riggers and tenders will not have to be in direct contact with any suspended load while controlling position or orientation.
- Rigging shall be properly stored in a vertical position, where possible, and inspected daily, by a competent person, before use. An inspection log must be maintained to document inspection proceedings and condition of the rigging. Rigging identified as “damaged” must identified as such and removed from service.

### **3.22.2 Suspended Loads**

- Suspended loads will not pass over workers at any time.
- Site personnel are prohibited from passing under suspended loads.
- Tag lines will be used for all suspended loads so that riggers and tenders will not have to be in direct contact with any suspended load while controlling position or orientation.

### **3.22.3 Powered Industrial Trucks**

Powered Industrial Trucks (i.e. forklifts, material handlers) may be required for materials movement during project activities. Powered Industrial Trucks present the potential for damage to equipment, materials and personnel by impaling or striking personnel or materials with the fork tines. Additionally, Powered Industrial Trucks may tip if they are incorrectly loaded, driven at excessive speeds or operated with the forks too high.

The following rules apply whenever a forklift is used on the project:

- Only trained and authorized drivers will operate Powered Industrial Trucks. Powered Industrial Truck Operators must receive training in accordance with 29 CFR 1910.178.
- A rated lifting capacity must be posted in a location readily visible to the operator.
- A Powered Industrial Truck must not be used to elevate employees unless a platform with guardrails, a back guard, and a kill switch is provided on the vehicle. When guardrails are not possible, fall arrest protection is required.



- The subcontractor operating the forklift must post and enforce a set of operating rules for forklift trucks.
- Stunt driving and horseplay are prohibited.
- Employees must not ride on the forks.
- Employees must never be permitted under the forks (unless forks are blocked).
- The driver must inspect the forklift once a shift and document this inspection.
- The operator must look in the direction of travel and must not move the vehicle until all persons are clear of the vehicle.
- Forks must be carried as low as possible.
- The operator must lower the forks, shut off the engine, and set the brakes (or block the wheels) before leaving the forklift operator's position unless maintenance or safety inspections require the forklift to be running.
- Trucks must be blocked and have brakes set when Powered Industrial Trucks are driven onto their beds.
- Extreme care must be taken when tilting elevated loads.
- Every forklift must have operable brakes capable of safely stopping it when fully loaded.
- Powered Industrial Trucks must have parking brakes and an operable horn.
- When the operator is exposed to possible falling objects, industrial trucks must be equipped with overhead protection (canopy).

## 3.23 Working Above or Near Water

(Reserved)

## 3.24 General Hazards

### 3.24.1 General Practices and Housekeeping

- Good housekeeping must be maintained at all times in all project work areas.
- Common paths of travel should be established and kept free from the accumulation of materials.
- Keep access to aisles, exits, ladders, stairways, scaffolding, and emergency equipment free from obstructions.
- Provide slip-resistant surfaces, ropes, and/or other devices to be used.
- Specific areas should be designated for the proper storage of materials.
- Tools, equipment, materials, and supplies will be stored in an orderly manner.



- As work progresses, scrap and unessential materials must be neatly stored or removed from the work area.
- Containers should be provided for collecting trash and other debris and will be removed at regular intervals.
- All spills will be quickly cleaned up. Oil and grease will be cleaned from walking and working surfaces.

### **3.24.2 Hazard Communication**

The SHSO, or designee, is to perform the following:

- Review of the Contaminant of Concern information contained in Table 3-1 (section 3.5). Additional applicable Hazard Communication information is included in Attachment 8 of this HSP.
- Complete an inventory of chemicals brought on site. See Attachment 8.
- Confirm that an inventory of chemicals brought on site is available.
- Request or confirm locations of Material Safety Data Sheets (MSDSs) from the client, contractors, and subcontractors for chemicals to which JV II employees are potentially exposed. Maintain MSDSs in this HSP (Attachment 6).
- Before or as the chemicals arrive on site, obtain an MSDS for each hazardous chemical.
- Label chemical containers with the identity of the chemical and with hazard warnings, and store properly.
- Give employee's required chemical-specific HAZCOM training using Attachment 7.
- Store all materials properly, giving consideration to compatibility, quantity limits, secondary containment, fire prevention, and environmental conditions.

### **3.24.3 Shipping and Transportation of Chemical Products**

Chemicals brought to the site might be defined as hazardous materials by the U.S. Department of Transportation (DOT). All staff who ship the materials or transport them by road must receive training in shipping dangerous goods. All hazardous materials that are shipped (e.g., via Federal Express) or are transported by road must be properly identified, labeled, packed, and documented by trained staff. Contact the HSM or the Equipment Coordinator for additional information.

### **3.24.4 Heat Stress**

- It is recommended that personnel drink 16 ounces of water before beginning work. Disposable cups and water maintained at 50°F to 60°F should be available. Under severe conditions, drink 1 to 2 cups every 20 minutes, for a total of 1 to 2 gallons per day. Do not use alcohol in place of water or other nonalcoholic fluids. Decrease your intake of coffee and caffeinated soft drinks during working hours.



- Acclimate yourself by slowly increasing workloads (e.g., do not begin with extremely demanding activities).
- Use cooling devices, such as cooling vests, to aid natural body ventilation. These devices add weight, so their use should be balanced against efficiency.
- Use mobile showers or hose-down facilities to reduce body temperature and cool protective clothing.
- Conduct field activities in the early morning or evening and rotate shifts of workers, if possible.
- Avoid direct sun whenever possible, which can decrease physical efficiency and increase the probability of heat stress. Take regular breaks in a cool, shaded area. Use a wide-brim hat or an umbrella when working under direct sun for extended periods.
- Provide adequate shelter/shade to protect personnel against radiant heat (sun, flames, hot metal).
- Maintain good hygiene standards by frequently changing clothing and showering.
- Observe one another for signs of heat stress. Persons who experience signs of heat syncope, heat rash, or heat cramps should consult the SHSO to avoid progression of heat-related illness.

SYMPTOMS AND TREATMENT OF HEAT STRESS					
	Heat Syncope	Heat Rash	Heat Cramps	Heat Exhaustion	Heat Stroke
Signs and Symptoms	Sluggishness or fainting while standing erect or immobile in heat.	Profuse tiny raised red blister-like vesicles on affected areas, along with prickling sensations during heat exposure.	Painful spasms in muscles used during work (arms, legs, or abdomen); onset during or after work hours.	Fatigue, nausea, headache, giddiness; skin clammy and moist; complexion pale, muddy, or flushed; may faint on standing; rapid thready pulse and low blood pressure; oral temperature normal or low	Red, hot, dry skin; dizziness; confusion; rapid breathing and pulse; high oral temperature.
Treatment	Remove to cooler area. Rest lying down. Increase fluid intake. Recovery usually is prompt and complete.	Use mild drying lotions and powders, and keep skin clean for drying skin and preventing infection.	Remove to cooler area. Rest lying down. Increase fluid intake.	Remove to cooler area. Rest lying down, with head in low position. Administer fluids by mouth. Seek medical attention.	Cool rapidly by soaking in cool—but not cold—water. Call ambulance, and get medical attention immediately!

### 3.24.5 Monitoring Heat Stress

These procedures should be considered when the ambient air temperature exceeds 70°F, the relative humidity is high (>50 percent), or when workers exhibit symptoms of heat stress.

The heart rate (HR) should be measured by the radial pulse for 30 seconds, as early as possible in the resting period. The HR at the beginning of the rest period should not exceed 100 beats/minute, or 20 beats/minute above resting pulse. If the HR is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same. If the pulse rate still exceeds 100 beats/minute at the beginning of the next rest period, the work cycle should be further shortened by 33 percent. The procedure is



continued until the rate is maintained below 100 beats/minute, or 20 beats/minute above resting pulse.

### 3.24.6 Cold Stress

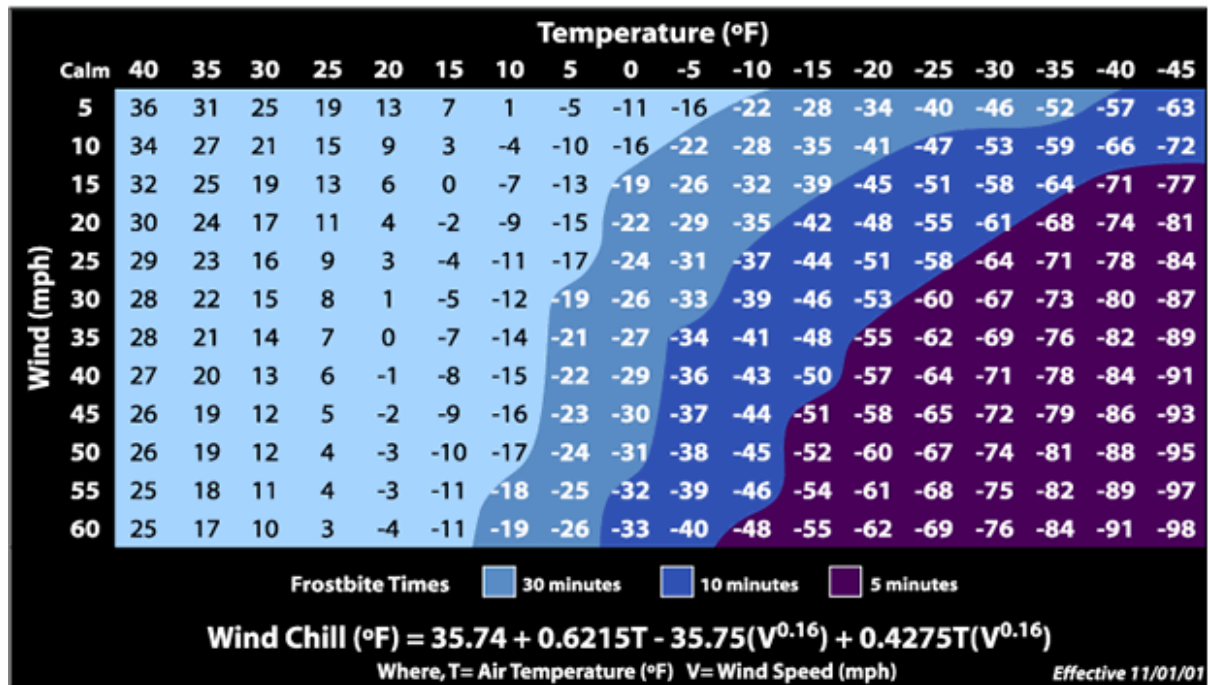
- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council (NSC).
- Wind-chill index is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- NSC Guidelines for Work and Warm-Up Schedules can be used with the wind-chill index to estimate work and warm-up schedules for fieldwork. The guidelines are not absolute; workers should be monitored for symptoms of cold-related illnesses. If symptoms are not observed, the work duration can be increased.
- Persons who experience initial signs of immersion foot, frostbite, hypothermia should consult the SHSO to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast— be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	Frostbite	Hypothermia
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm—but not hot—water. Have victim drink warm fluids, but not coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but not coffee or alcohol. Get medical attention.





## Wind Chill Chart



### 3.25 Procedures for Locating Buried Utilities

#### Local Utility Mark-Out Service

Name: Miss Utility of Virginia

Phone: 800) 552-7001 or (800) 257-7777

Email: [www.missutilityofvirginia.com](http://www.missutilityofvirginia.com)

- Review and follow applicable requirements of COMNAVREG MIDLANT Instruction 11300.1 for all ground-disturbing projects (see Attachment 19).
- Secure the services of a second party utility locate company (specialty subcontractor) to verify local utility Mark Out Services, in areas of congested utility groupings, in areas of government/military facilities where access by local utility mark-out services are in question/inaccessible or other special situations. When second party utility locate services are secured, the following technologies can be utilized to verify underground utilities:
  - Ground Penetrating Radar (GPR),
  - Radio Frequency (RF),
  - Dual RF,
  - Ferromagnetic Detectors
  - Electronic markers



A combination of one or more of the above technologies should be used. This survey should be conducted prior to and within 10 days of any ground disturbing activities. The Project Manager or Site Superintendent must ensure that a JV II representative is on-site to verify/observe the activities of the second party utility locate service.

- A dig permit must be issued prior to any ground-disturbing activities.
- Where available, obtain utility diagrams for the facility.
- Review locations of sanitary and sanitary sewers, electrical conduits, water supply lines, natural gas lines, and fuel tanks and lines.
- Review proposed locations of intrusive work with facility personnel knowledgeable of locations of utilities. Check locations against information from utility mark-out service.
- Where necessary (e.g., uncertainty about utility locations), excavation or drilling of the upper depth interval shall be performed manually. Underground utility locations must be physically verified by hand digging using wood or fiberglass-handled tools when any adjacent construction work is expected to come within three (3) feet of the underground utility system. If construction is parallel and within 5'ft (1.5 m) to an existing utility, the utility shall be exposed by hand digging every 30 m (100 feet). Where utilities run parallel to construction for distances of less than 30 m (100 feet), distances will need to be adjusted accordingly to properly verify the location of the utility.
- Monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon).

When the client or other onsite party is responsible for determining the presence and locations of buried utilities, the JV II individual responsible for site operations should confirm that arrangement.

## 3.26 Biological Hazards and Controls

Attachment 9 provides a Biological Hazard Fact Sheet. The following sections provide information on potential biological hazards. In addition to safety caution and preventative measures identified in attachment 9, site personnel should notify their supervisors of any potential allergic reactions that may occur as a result of contact with biological hazards that in the work place. If employee antidotes are required to counteract allergic reactions from biological hazard exposure, employees shall make personnel providing medical attention aware of the location and type of antidotes needed to counteract any allergic reaction.

### 3.26.1 Snakes

Although the potential exposure to poisonous snakes during the execution of this Task Order is considered to be negligible, this information is included for the purposes of providing employee awareness.

Snakes typically are found in underbrush, tall grassy areas, near cover such as fallen logs, brush piles, rock walls, abandoned foundations, or rock ledges. They may be resting or waiting for prey. Watch where you place your hands and feet. Walk around, rather than



over, fallen logs. When traveling through areas thought to contain venomous snakes, you can minimize the possibility of an encounter by using common sense. If you encounter a snake do your best to stay calm and look around as there may be other snakes. Turn around and walk away on the same path you used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Seek medical attention immediately. **DO NOT apply ice, cut the wound, or apply a tourniquet.** Try to identify the type of snake: note color, size, patterns, and markings to assist medical personnel with proper treatment measures (see below – Identification of Poisonous Snakes). There are three identified poisonous snakes that inhabit Virginia. These are the Northern Copperhead, the Timber Rattler and the Eastern Cottonmouth (see below). Note: Rattlesnakes do not always rattle when a “threat” is near.

**Northern Copperhead**



**Timber Rattler (or Canebrake Rattler)**

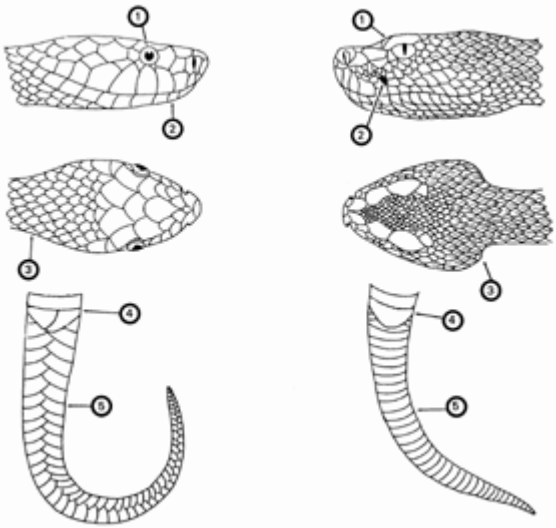


**Eastern Cottonmouth (or Water Moccasin)**





### Identification of Poisonous Snakes

(Major Identification Features) non-venomous snake	venomous snake
<ol style="list-style-type: none"> <li>1. Round pupils</li> <li>2. No sensing pit</li> <li>3. Head slightly wider than neck</li> <li>4. Divided anal plate</li> <li>5. Double row of scales on the underside of the tail</li> </ol>	<ol style="list-style-type: none"> <li>1. Eliptical pupils</li> <li>2. Sensing pit between eye and nostril</li> <li>3. Head much wider than neck</li> <li>4. Single anal plate</li> <li>5. Single scales on the underside of the tail</li> </ol>
	

### 3.26.2 Poison Ivy and Poison Sumac

Poison ivy, poison oak, and poison sumac typically are found in brush or wooded areas. They are more commonly found in moist areas or along the edges of wooded areas. Shrubs are usually 12" to 30" high, or can also be a tree-climbing vine, with triple leaflets and short, smooth hair underneath. Plants are red and dark green in Spring and Summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in Fall, but plants lose its (yellowed, then brown) leaves in Winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons.

Become familiar with the identity of these plants (see below). Wear protective clothing that covers exposed skin and clothes. Avoid contact with plants and the outside of protective clothing. If skin contacts a plant, wash the area with soap and water immediately. If the reaction is severe or worsens, seek medical attention. See attached Biological Fact Sheets in Attachment 9 for additional information.



**Poison Ivy****Poison Sumac****Poison Oak**

### 3.26.3 Ticks

Ticks typically are in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch in size. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into/taped to boots; spray **only outside** of clothing with permethrin or permanone and spray skin with only DEET; and check yourself frequently for ticks.

If bitten by a tick, grasp it at the point of attachment and carefully remove it. After removing the tick, wash your hands and disinfect and press the bite areas. Save the removed tick. Report the bite to human resources. Look for symptoms of Lyme disease or Rocky Mountain spotted fever (RMSF). Lyme: a rash might appear that looks like a bullseye with a small welt in the center. RMSF: a rash of red spots under the skin 3 to 10 days after the tick bite. In both cases, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, seek medical attention. See attached Biological Fact Sheets

### 3.26.4 Bees and Other Stinging Insects

Bees and other stinging insects may be encountered almost anywhere and may present a serious hazard, particularly to people who are allergic. Watch for and avoid nests. Keep exposed skin to a minimum. Carry a kit if you have had allergic reactions in the past, and inform the SHSO and/or buddy. If a stinger is present, remove it carefully with tweezers. Wash and disinfect the wound, cover it, and apply ice. Watch for allergic reaction; seek medical attention if a reaction develops.

### 3.26.5 Bloodborne Pathogens

(Reference SOP HSE-202, *Bloodborne Pathogens*)

Exposure to bloodborne pathogens may occur when rendering first aid or CPR, or when coming into contact with landfill waste or waste streams containing potentially infectious material. Exposure controls and personal protective equipment (PPE) are required. Hepatitis B vaccination must be offered before the person participates in a task where exposure is a possibility.



### 3.26.6 Mosquito Bites

Because of the recent detection of the West Nile Virus in the Southeastern United States, it is recommended that **preventative measures** be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. The following guidelines should be followed to reduce the risk of these concerns for working in areas where mosquitoes are prevalent.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET because mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET (N,N-diethyl-meta-toluamide). DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's DIRECTIONS FOR USE, as printed on the product.

Note: Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

### Symptoms of Exposure to the West Nile Virus

Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. The West Nile Virus incubation period is from 3-15 days.

If you have any questions or to report any suspicious symptoms, contact the project Health and Safety Manager.

### 3.26.7 Brown Recluse Spiders

It is regarded by many as the most dangerous spider in the United States. Although sightings of this spider in Virginia is rare, it can occur because of shipping, cars, planes and trains, the Brown Recluse spider can be found most anywhere in the United States. Specific reports of recluse presence have been identified for parts of western Virginia.

Brown Recluse Spiders are usually 1 inch or larger in size, including the legs and can grow as large as 3 inches. Young Brown Recluse spiders are smaller are smaller and somewhat lighter in color. Brown recluse spider bites don't always hurt right away. In fact, you may not know that you have been bitten until other symptoms appear. Symptoms of a brown





recluse spider bite may include the following:

- Reddened skin followed by a blister that forms at the bite site.
- Mild to intense pain and itching for 2 to 8 hours following the bite.
- An open sore with a breakdown of tissue (necrosis) that develops within a few hours to 3 to 4 days following the bite and the area may become painful, itchy, hot, swollen, red and tender. An irregular ulcerous sore, caused by necrosis, will often appear that is from 1/4 inch to 10 inches in diameter. Prompt attention is the best defense against preventing the necrosis. The wound is often described as being reddish and surrounded by a bluish area with a narrow whitish separation in between the red and the blue. This gives it the famous "bull's eye" pattern. In just hours, a bite from the highly venomous Brown Recluse spider can create blisters and cause tissue damage.

Some people have a severe, systemic (whole-body) reaction to brown recluse spider bites, including the rapid destruction of red blood cells and anemia. Signs and symptoms include: Fever and chills.

- Skin rash all over the body with many tiny, flat purple and red spots.
- Nausea or vomiting.
- Joint pain.

If you think you have been bitten by a brown recluse spider:

- Remain calm. Too much excitement or movement will increase the flow of venom into the blood.
- Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider.
- Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite.
- Do not apply a tourniquet. It may cause more harm than benefit.
- Try to positively identify the spider to confirm its type.
- Seek prompt medical attention.

A brown recluse bite can be serious and will likely require immediate medical care. Seek medical attention if you believe you have been bitten by a recluse spider, especially if severe symptoms develop throughout your body or an open sore and necrosis develop. A brown recluse spider bite is diagnosed through a physical examination and questions about the bite. You should be prepared to describe the spider, where and when the bite took place, and what you were doing at the time. Your health professional will ask what your main symptoms are, when they began, and how they have developed, progressed, or changed since the bite.

### 3.26.8 Widow Spiders

Females widow spiders range from 8-15 mm in body length; males are smaller, sometimes very small (2 mm). Most have globose, shiny abdomens that are predominantly black with red markings (although some may be pale and/or have lateral stripes), with moderately long, slender legs. These spiders are nocturnal and build a three-dimensional tangled web,



often with a conical tent of dense silk in a corner where the spider hides during the day. In nature, most species are found under rocks and logs, but they readily adapt to human-altered environments, where they are most commonly found in outbuildings, water meter holes, nursery cans, and under any item or structure that has been undisturbed for a lengthy period. Formerly, most bites by black widows (almost all by female spiders) occurred in outhouses, but presently, widow bites occur most frequently when the spider is trapped against human skin, either by reaching under objects where the spider is hiding or when putting on clothing, gloves or shoes containing the spider. Widow spiders are generally very timid and only bite in self-defense when they accidentally contact humans. Although the Northern and Southern black widows are known to inhabit Virginia, others species are depicted below for identification purposes.

Southern Widow



Red Widow



Brown Widow



Note: the northern widow is similar to the southern widow except the telltale red markings are shaped slightly different.

Bite symptoms are systemic, spreading through the lymphatic system, and usually start about 1-3 hours after the bite. The most common symptoms are intense pain, rigid abdominal muscles, muscle cramping, malaise, local sweating, nausea, vomiting, and hypertension. Other symptoms may include tremors, labored breathing, restlessness, increased blood pressure, and fever. If left untreated, widow bite symptoms usually last 3-5 days.

If bitten, remain calm, and immediately seek medical attention (contact your physician, hospital and/or poison control center). Apply an ice pack directly to the bite area to relieve swelling and pain. Try to collect the spider, without being bitten, (even a mangled specimen has diagnostic value), if possible, for positive identification by a spider expert. A plastic bag, small jar, or pill vial is useful and no preservative is necessary, but rubbing alcohol helps to preserve the spider. A hospital stay may be recommended, particularly for those with a heart condition or with health problems. A physician may administer a specific antivenin to counteract the venom or calcium gluconate to relieve pain. Calcium gluconate and/or antivenin may be administered to relieve or counteract symptoms.

### 3.26.9 Rabid Animals

(Reserved)

### 3.26.10 Fire Ants

(Reserved)



## 3.27 Constituents of Concern

Project Constituents of concern are listed in Table 3-1. Please to Project Files for more detailed project Constituent of Concern data.

TABLE 3-1 CONSTITUENTS OF CONCERN

Constituent	Location & Max.a Concentration	Exposure Limitb	IDLHc	Symptoms and Effects of Exposure	PIPd (eV)
Aldrin	SD: 6.3 BC-SD04-09	Ca TWA 0.25 mg/m <sup>3</sup> [skin] (REL)	Ca [25 mg/m <sup>3</sup> ]	Headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort); myoclonic jerks of limbs; clonic, tonic convulsions; coma; hematuria (blood in the urine), azotemia; [potential occupational carcinogen]	UK
alpha-BHC (as cyclohexane)	SD: 140 BC-SD04-D-1824	300 ppm (1050 mg/m <sup>3</sup> )	1300 [10%LEL]	Irritation eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	9.88
alpha-Chlordane (as chlordane)	SD: 200 NNB-BCM-SD99-09	Ca 0.5 mg/m <sup>3</sup> [skin]	Ca [100 mg/m <sup>3</sup> ]	Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria; in animals: lung, liver, kidney damage; [potential occupational carcinogen]	UK
beta-BHC (as cyclohexane)	SD: 95 BC-SD04-D-0612	300 ppm (1050 mg/m <sup>3</sup> )	1300 [10%LEL]	Irritation eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	9.88
delta-BHC (as lindane)	SD: 360 BC-SD04-D-0612	0.5 mg/m <sup>3</sup> [skin] (REL)	50 mg/m <sup>3</sup>	Irritation eyes, skin, nose, throat; headache; nausea; clonic convulsions; respiratory difficulty; cyanosis; aplastic anemia; muscle spasm; in animals: liver, kidney damage	UK
gamma-BHC (as lindane)	SD: 120 BC-SD04-D-1824	0.5 mg/m <sup>3</sup> [skin] (REL)	50 mg/m <sup>3</sup>	Irritation eyes, skin, nose, throat; headache; nausea; clonic convulsions; respiratory difficulty; cyanosis; aplastic anemia; muscle spasm; in animals: liver, kidney damage	UK
gamma-Chlordane (as chlordane)	SD: 93 BC-SD04-D-1218	Ca 0.5 mg/m <sup>3</sup> [skin]	Ca [100 mg/m <sup>3</sup> ]	Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria; in animals: lung, liver, kidney damage; [potential occupational carcinogen]	UK
Aluminum	SD: 27,200 BC-SD04-14 SW: 354 BC-SW04-14	10 mg/m <sup>3</sup> (REL) 15 mg/m <sup>3</sup> (PEL)	ND	Irritation eyes, skin, respiratory shystem	NA



TABLE 3-1 CONSTITUENTS OF CONCERN

Constituent	Location & Max.a Concentration	Exposure Limitb	IDLHc	Symptoms and Effects of Exposure	PIPd (eV)
Antimony	SD: 14.4 BC-SD04-D-1218	0.5 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>	Irritation of eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea, stomach cramps, insomnia, anorexia, unable to smell properly	NA
Arochlor 1242	SD: 3,400 BC-SD04-10-1218	0.001 mg/m <sup>3</sup> (REL), Ca 1 mg/m <sup>3</sup> (PEL) [skin]	5 mg/m <sup>3</sup> Ca	Irritation eyes, chloracne, liver damage, reproductive effects, potential occupational carcinogen	UK
Arochlor 1252	SD: 2,300 BC-SD04-10-1218 SW <sup>n</sup>	0.001 mg/m <sup>3</sup> (REL), Ca 0.5 mg/m <sup>3</sup> (PEL) [skin]	5 mg/m <sup>3</sup> Ca	Irritation eyes, chloracne, liver damage, reproductive effects, potential occupational carcinogen	UK
Arochlor 1260	SD: 1,700 BC-SD04-D-0612 SW:	0.5 mg/m <sup>3</sup>	5 Ca	Eye and skin irritation, acne-form dermatitis, liver damage, reproductive effects	0.5 mg/m <sup>3</sup>
Arsenic (metal)	SS: 107 BC-SD04-D-0612 SW:	0.002 mg/m <sup>3</sup> (REL), C =15 min, Ca 0.01 mg/m <sup>3</sup> (PEL)	5 mg/m <sup>3</sup> Ca	Ulceration of nasal septum, respiratory irritation, dermatitis, gastrointestinal disturbances, peripheral neuropathy, hyperpigmentation	NA
Barium (as Barium Sulfate)	SD: 449 BC-SD04-D-0612 SW: 51.7 BC-SW04-08	10 mg/m <sup>3</sup> (REL) total 15 mg/m <sup>3</sup> (PEL) total 5 mg/m <sup>3</sup> (PEL/REL) respirable	ND	Irritation of eyes, nose, upper respiratory system, benign pneumoconiosis (baritosis)	NA
Beryllium (metal)	SD: 4.8 NNB-BCM-SD99-18A SW:	C= 0.0005 mg/m <sup>3</sup> (REL), Ca 0.002 mg/m <sup>3</sup> (PEL), C = 0.005 mg/m <sup>3</sup> 0.025 mg/m <sup>3</sup> 30 min max peak	4 mg/m <sup>3</sup> , Ca	Anorexia, weight loss, weakness/exhaustion, chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency, irritation eyes, dermatitis, potential occupational carcinogen	NA
Bis-(2-ethylhexyl) phthalate	SD: 7,200 NNB-BCM-SD99-07P	5 mg/m <sup>3</sup>	5,000 Ca	Eye and mucous membrane irritant	UK
Chromium (as Cr III )	SD: 192 BC-SD04-10-1218	0.5 mg/m <sup>3</sup> (REL) total 15 mg/m <sup>3</sup> (PEL) total	25 mg/m <sup>3</sup>	Irritated eyes, sensitization dermatitis, histological fibrosis of lungs	NA
Cobalt (as metal dust)	SD: 15.3 NNB-BCM-SD99-10	0.05 mg/m <sup>3</sup> (REL) 0.1 mg/m <sup>3</sup> (PEL)	20 mg/m <sup>3</sup>	Cough, breathing difficulty, wheezing, decreased pulmonary function, weight loss, dermatitis, diffuse nodular fibrous, respiratory hypersensitivity, asthma	NA



TABLE 3-1 CONSTITUENTS OF CONCERN

Constituent	Location & Max.a Concentration	Exposure Limitb	IDLHc	Symptoms and Effects of Exposure	PIPd (eV)
Copper (as copper metal dust)	SD: 358 BC-SD04-10-1218	1 mg/m <sup>3</sup>	100 mg/m <sup>3</sup>	Irritation of eyes, respiratory system, cough, breathing difficulty, wheezing	NA
Cyanide (as sodium or potassium cyanide)	SD: 1.2 NNB-BCM-SD97-03	C = 5 mg/m <sup>3</sup> (10 min.) (REL) 5 mg/m <sup>3</sup> (PEL)	25 mg/m <sup>3</sup>	Irritation of eyes, skin; asphyxia, weakness, headache, confusion, nausea, vomiting, increased respiratory rate, thyroid, blood changes	NA
1,2 Dichlorobenzene	SD: 110 NNB-BCM-SD99-15B	C 50 ppm (300 mg/m <sup>3</sup> ) (REL)	200 ppm	Irritation eyes, nose; liver, kidney damage; skin blisters	9.06
4,4'-DDD	SD: 620 BC-SD04-D-1218	ND	ND	NA	UK
4,4'-DDE	SD: 810 BC-SD04-D-1218	ND	ND	NA	UK
4,4'-DDT	SD: 140 NNB-BCM-SD99-07P	0.5 mg/m <sup>3</sup> (REL), Ca 1 mg/m <sup>3</sup> (PEL) [skin]	500 mg/m <sup>3</sup> Ca	Irritation eyes, skin, parathesia tongue, lips, face, tremor, anxiety, dizziness, confusion, malaise, headache, weakness/exhaustion, convulsions, pareisis hands, vomiting, potencial occupational carcinogen	UK
Dieldrin	SD: 11 BC-SD04-D-0612 SW:	0.25 mg/m <sup>3</sup> [skin]	50 mg/m <sup>3</sup> Ca	Headache, dizziness, nausea, vomiting, malaise, sweating, myoclonic limb jerks, clonic tonic convulsions, come, potencial occupational carcinogen	UK
Endosulfan II (as endosulfan)	SD: 2.6 BC-SD04-18	0.1 mg/m <sup>3</sup> [skin] (REL)	ND	Irritation skin; nausea, confusion, agitation, flushing, dry mouth, tremor, convulsions, headache; in animals: kidney, liver injury; decreased testis weight	UK
Endosulfan sulfate	SD: 16 BC-SD04-08	0.1 mg/m <sup>3</sup> [skin] (REL)	ND	Irritation skin; nausea, confusion, agitation, flushing, dry mouth, tremor, convulsions, headache; in animals: kidney, liver injury; decreased testis weight	UK
Endrin	SD:10 BC-SD04-09	0.1 mg/m <sup>3</sup> [skin]	2 mg/m <sup>3</sup>	Epileptiform convulsions; stupor, headache, dizziness; abdominal discomfort, nausea, vomiting; insomnia; aggressiveness, confusion; drowsiness, lassitude (weakness, exhaustion); anorexia; in animals: liver damage	UK
Endrin aldehyde	SD: 2.6 BC-SD04-01	ND	ND	NA	UK



TABLE 3-1 CONSTITUENTS OF CONCERN

Constituent	Location & Max.a Concentration	Exposure Limitb	IDLHc	Symptoms and Effects of Exposure	PIPd (eV)
Heptaclor	SD: 10 NNB-BCM-SD99-02	Ca 0.5 mg/m <sup>3</sup> [skin] (REL)	Ca [35 mg/m <sup>3</sup> ]	In animals: tremor, convulsions; liver damage; [potential occupational carcinogen]	UK
Iron (as iron oxide dust)	SD: 60,900 NNB-BCM-SD97-13 SW: 2,190 BC-SW04-18	5 mg/m <sup>3</sup> (REL) 10 mg/m <sup>3</sup> (PEL)	2500 mg/m <sup>3</sup>	Benign pneumoconiosis with x-ray shadows indistinguishable from fibrotic pneumoconiosis	NA
Lead	SD: 3,190 NNB-BCM-SD97-02	0.05 mg/m <sup>3</sup>	100 mg/m <sup>3</sup>	Weakness lassitude, facial pallor, pal eye, weight loss, malnutrition, abdominal pain, constipation, anemia, gingival lead line, tremors, paralysis of wrist and ankles, encephalopathy, kidney disease, irritated eyes, hypertension	NA
2-methynaphthalene	SD: 94 NNB-BCM-SD99-15A	10	250	Eye irritation; respiratory system damage	7.96
2 methylphenol 4 methylphenol (as p-Cresol)	SD: NNB-BCM-SD99-15A	2.3 ppm REL 5 ppm PEL	250	Irritation eyes, skin, mucous membrane; central nervous system effects: confusion, depression, respiratory failure; dyspnea (breathing difficulty), irregular rapid respiration, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage	8.97
Magnesium (as magnesite)	SD: 7,300 NNB-BCM-SD99-20 SW: 177,000 BC-SW04-03	10 mg/m <sup>3</sup>	ND	Irritation of eyes, skin, respiratory system; cough	NA
Methylene Chloride	SD: 210 NNB-BCM-SD97-04	5 ppm	250	Eye and skin irritant, lassitude (weakness, exhaustion), drowsiness, dizziness; numbness, tingle limbs; nausea; [potential occupational carcinogen]	11.32
Manganese	SD: 6,410 BC-SD04-14-1218 SW: 174 BC-SW04-14	1 mg/m <sup>3</sup>	500 mg/m <sup>3</sup>	Parkinson's, asthenia, insomnia, mental confusion, dry throat, cough, chest tightness, decrease in pulmonary function, rales, flu-like fever, low-back pain, vomiting, feeling of discomfort, weakness, kidney damage	NA
Mercury	SD: 329 BC-SD04-14-0612	0.05 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	Skin and eye irritation, cough, chest pain, difficult breathing, bronchitis, pneumonitis, tremors, insomnia, irritability, indecision, headache, fatigue, weakness, GI disturbance	NA



TABLE 3-1 CONSTITUENTS OF CONCERN

Constituent	Location & Max.a Concentration	Exposure Limitb	IDLHc	Symptoms and Effects of Exposure	PIPd (eV)
Methoxychlor	SD: 7.8 NNB-BCM-SD99-02	Ca (REL) 15 mg/m <sup>3</sup> (PEL)	Ca [5000 mg/m <sup>3</sup> ]	In animals: fasciculation, trembling, convulsions; kidney, liver damage; [potential occupational carcinogen]	UK
Nickel (metal)	SD: 74.2 BC-SD04-10-1824	0.015 mg/m <sup>3</sup> (REL), Ca 1 mg/m <sup>3</sup> (PEL)	10 mg/m <sup>3</sup>	Sensatization dermatitis, allergic asthma, pneumotosis, potential occupational carcinogen	NA
Toxaphene	SD: 170 NNB-BCM-SD97-03	Ca [skin] (REL) TWA 0.5 mg/m <sup>3</sup> [skin]	Ca [200 mg/m <sup>3</sup> ]	Nausea, confusion, agitation, tremor, convulsions, unconsciousness; dry, red skin; [potential occupational carcinogen]	UK
Total Polyaromatic Aromatic Hydrocarbons (as coal tar pitch volatiles)	SD: 45,185 BC-SD04-01	0.1 mg/m <sup>3</sup> (REL) 0.2 mg/m <sup>3</sup> (PEL)	80 mg/m <sup>3</sup> Ca	Dermatitis and bronchitis, potential carcinogen.	UK
Selenium	SD: 6.2 NNB-BCM-SD99-19 SW:	0.2 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	Irritation of eyes, skin, nose, throat; visual disturbance, headache, chills, fever, breathing difficulty, metallic taste, garlic breath, GI disturbances, dermatitis	NA
Silver (metal)	SS: 72.4 BC-SD04-10-1218 SW:	0.01 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	Blue-gray eyes, nasal septum, throat; irritation, ulceration skin; GI disturbance	NA
Thallium	SD: 12.4 NNB-BCM-SD99-19 SW:	0.1 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>	Nausea, diarrhea, abdominal pain, vomiting, ptosis, strabismus, peri neuritis, tremor, tightness behind the sternum, chest pain, pulmonary edema, convulsions, chorea, psychosis, liver/kidney damage, alopecia, paresthesia legs	NA
Vanadium (dust)	SD: 135 BC-SD04-D-0612	0.05 mg/m <sup>3</sup> 10 min. ceiling	35 mg/m <sup>3</sup>	Irritation of eyes, skin, throat; green tongue, metallic taste, eczema; cough; fine rales, wheezing, bronchitis, breathing difficulty	NA



TABLE 3-1 CONSTITUENTS OF CONCERN

Constituent	Location & Max. <sup>a</sup> Concentration	Exposure Limit <sup>b</sup>	IDLH <sup>c</sup>	Symptoms and Effects of Exposure	PIP <sup>d</sup> (eV)
Zinc (as zinc oxide)	SD: 758 BC-SD04-10-1218 SW: 64.9 BC-SW04-18	5 mg/m <sup>3</sup> (REL), C = 15 mg/m <sup>3</sup> 15 mg/m <sup>3</sup> (PEL) total dust, 5 mg/m <sup>3</sup> (PEL) respirable dust	500 mg/m <sup>3</sup>	Chills, muscle ache, nausea, fever, dry throat, weakness/exhaustion, metallic taste, headache, blurred vision, low back pain, vomiting, malaise, chest tightness, breathing difficulty	NA

## Footnotes:

\*

<sup>a</sup> Specify sample-designation and media: SB (Soil Boring), A (Air), D (Drums), GW (Groundwater), L (Lagoon), TK (Tank), S (Surface Soil), SL (Sludge), SW (Surface Water). Results are in parts per billion (ppb) unless otherwise specified.

<sup>b</sup> Appropriate value of Permissible Exposure Limit (PEL, OSHA), Recommended Exposure Limit (REL, NIOSH), or TLV listed. C = Ceiling value (NIOSH), Ca = A substance NIOSH considers to be a potential occupational carcinogen

<sup>c</sup> IDLH = immediately dangerous to life and health (units are the same as specified "Exposure Limit" units for that contaminant); NL = No limit found in reference materials; CA = Potential occupational carcinogen.

<sup>d</sup> PIP = photoionization potential; NA = Not applicable; UK = Unknown.



### 3.27.1 Potential Routes of Exposure

**Dermal:** Contact with contaminated media. This route of exposure is minimized through proper use of PPE, as specified in Section 5.

**Inhalation:** Vapors and contaminated particulates. This route of exposure is minimized through proper respiratory protection and monitoring, as specified in Sections 5 and 6, respectively.

**Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

### 3.27.2 Radiological Hazards and Controls

Hazards	Controls
None Known	None Required



## 4.0 Behavior Based Loss Prevention System

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A Behavior Based Loss Prevention System (BBLPS) has been implemented on this project. BBLPS is a system to prevent or reduce losses using behavior-based tools and proven management techniques to focus on behaviors or acts that could lead to losses.

The four basic loss prevention tools that will be used to implement the BBLPS on this project include:

- Activity Hazard Analysis (AHA)
- Pre-Task Safety Plans (PTSP)
- Loss Prevention Observations (LPO)
- Loss and Near Loss Investigations (NLI)

The JV II individual responsible for site operations is responsible for implementing the BBLPS on the project site. The JV II individual responsible for site operations delegates authority to the SHSO for the implementation of the BBLPS on the project site, but the JV II individual responsible for site operations remains accountable for its implementation. The SHSO will only oversee the subcontractor's implementation of their AHAs and PTSPs processes on the project.

### 4.1 Activity Hazard Analysis

An AHA defines the activity being performed, the hazards posed, and control measures required to perform the work safely. Workers are briefed on the AHA before doing the work and their input is solicited before, during and after the performance of work to further identify the hazards posed and control measures required.

Activity Hazard Analysis will be prepared before beginning each project activity posing H&S hazards to project personnel using the AHA form provided in Attachment 10. The AHA will identify the work tasks required to perform each activity, along with potential H&S hazards and recommended control measures for each work task. In addition, a listing of the equipment to be used to perform the activity, inspection requirements and training requirements for the safe operation of the equipment listed must be identified.

An AHA will be prepared for all field activities performed by JV II and subcontractors during the course of the project and should be reviewed and accepted by the Health and Safety Manager. The project-specific, general, and biological hazards discussed in Section 3, the Hazard Analysis Table (Table 1-1), and respective applicable JV II partner Standards of Practice (SOPs) should be used as a basis for preparing these AHAs.

JV II subcontractors will be required to provide AHAs specific to their scope of work on the project for acceptance by the SHSO. Each subcontractor will submit AHAs for their field activities, as defined in their work plan/scope of work, along with their project-specific HSP. Additions or changes in JV II or subcontractor field activities, equipment, tools or material to perform work or additional/different hazard encountered that require additional/different hazard control measures requires either a new AHA to be prepared or an existing AHA to be revised.



## 4.2 Pre-Task Safety Plans

Daily safety meetings are held with all project personnel in attendance to review the hazards posed and required H&S procedures/AHAs that apply for each day's project activities. The PTSPs serve the same purpose as these general assembly safety meetings, but the PTSPs are held between the crew supervisor and their work crews to focus on those hazards posed to individual work crews. At the start of each day's activities, the crew supervisor completes the PTSP, provided in Attachment 11, with input from the work crew, during their daily safety meeting. The day's tasks, personnel, tools and equipment that will be used to perform these tasks are listed, along with the hazards posed and required H&S procedures, as identified in the JSA. The use of PTSPs better promotes worker participation in the hazard recognition and control process, while reinforcing the task-specific hazard and required H&S procedures with the crew each day. The use of PTSPs is a common safety practice in the construction industry.

## 4.3 Loss Prevention Observations

Loss-Prevention Observations (LPOs) will be conducted by the JV II individual responsible for site operations/SHSO for specific work tasks or operations comparing the actual work process against established safe work procedures identified in the project-specific HSP and AHAs. LPOs are a tool to be used by supervisors to provide positive reinforcement for work practices performed correctly, while also identifying and eliminating deviations from safe work procedures that could result in a loss. The JV II individual responsible for site operations/SHSO will perform at least one LPO each week for tasks/operations addressed in the project-specific HSP or AHA. The JV II individual responsible for site operations/SHSO will complete the LPO form in Attachment 12 for the task/operation being observed, following the process below.

## 4.4 Loss/Near-Loss Investigations

Loss/near-loss investigations will be performed for the all JV II and subcontractor incidents involving:

- Person injuries/illnesses and near-miss injuries
- Equipment/property damage
- Spills, leaks, regulatory violations
- Motor vehicle accidents

The causes of loss and near-loss incidents are similar, so by identifying and correcting the causes of near-loss incidents, future loss incidents may be prevented. The following is the loss/near-loss investigation process:

- Gather all relevant facts, focusing on fact-finding, not fault-finding, while answering the who, what, when, where, and how questions.
- Draw conclusions, pitting facts together into a probable scenario.



- Determine incident root cause(s), which are basic causes on why an unsafe act/condition existed.
- Develop and implement solutions, matching all identified root causes with solutions.
- Communicate incident as a lesson learned to all project personnel.
- File follow-up on implemented corrective active action to confirm solution is appropriate.

Site Supervisors/SHSO will perform an incident investigation, as soon as practical after incident occurrence during the day of the incident, for all loss and near-loss incidents that occur on the project. Loss and near-loss incident investigations will be performed using the following incident investigation forms provided in Attachment 13:

- Incident Report Form (IRF)
- Incident Investigation Form
- Root Cause Analysis Form

All loss and near-loss incidents involving personal injury, property damage in excess of \$1,000 or near-loss incidents that could have resulted in serious consequences will be investigated by completing the incident investigation forms and submitting them to the Project Manager and HSM within 24 hours of incident occurrence. A preliminary Incident Investigation and Root Cause Analysis will be submitted to the Project Manager and HSM within 24 hours of incident occurs. The final Incident Investigation and Root Cause Analysis will be submitted after completing a comprehensive investigation of the incident.



## 5.0 Personal Protective Equipment

Personal protective equipment (PPE) specifications are listed in Table 5-1.

**Table 5-1 Personal Protective Equipment<sup>a</sup>**

Task	Level	Body	Head	Respirator <sup>b</sup>
Tasks identified in section 1.5 of this HSP.	D	Designated work clothes; Steel/fiberglass-toe work boots (ANSI rated); work gloves (cut resistant).	Hardhat Safety glasses Ear protection (as applicable) <sup>d</sup>	None required
A function, identified in section 1.4 of this HSP, and where dermal contact with constituents of concern is <u>limited to hands only</u> .	Modified D <sub>1</sub>	Designated work clothes; steel/fiberglass-toe work boots (ANSI rated); Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat Safety glasses Ear protection (as applicable) <sup>d</sup> Face shields (in combination with safety glasses or goggles when the potential for exposure to chemical or other splashes hazards may exist).	None required.
A function, identified in section 1.4 of this HSP, and where dermal contact with constituents of concern is potentially <b>NOT</b> limited to the hands.	Modified D <sub>2</sub>	<b>Coveralls:</b> Uncoated Tyvek® with high visibility vest or clothing, (coated chemical-resistant coveralls for transformer sampling/decommissioning) <b>Boots:</b> Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers <b>Gloves:</b> Inner & Outer surgical-style nitrile chemical-resistant nitrile gloves. For sampling of transformers use a 20 mil neoprene gloves.	Hardhat Safety glasses Ear protection (as applicable) <sup>d</sup> Face shields (in combination with safety glasses or goggles while performing the sampling of transformer contents).	None required.
A function, identified in section 1.4 of this HSP and where respiratory and/or dermal exposure to site contaminants of concern will be in excess of established exposure limits as a result of encountered site conditions. Contact HSM prior to implementing Level C PPE upgrade, per Table 6-1.	C	<b>Coveralls:</b> Polycoated Tyvek® <b>Boots:</b> Steel-toe, chemical-resistant boots OR steel-toe, leather work boots with outer rubber boot covers <b>Gloves:</b> Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat Splash shield <sup>c</sup> Ear protection (as applicable) <sup>d</sup> Spectacle inserts	APR, full face, MSA Ultratwin or equivalent; with GME-H cartridges or equivalent <sup>e</sup> .
A function, identified in section 1.4 of this HSP and where Level B PPE protection is required to meet established respiratory protection requirements that are in excess of Level C PPE capabilities based on a review of available information. Contact HSM prior to implementing Level B PPE.	B	<b>Coveralls:</b> Polycoated Tyvek® <b>Boots:</b> Safety -toe, chemical-resistant boots OR Safety -toe, leather work boots with outer rubber boot covers <b>Gloves:</b> Inner surgical-style nitrile & outer chemical-resistant nitrile gloves.	Hardhat Splash shield <sup>c</sup> Ear protection <sup>d</sup> Spectacle inserts	Positive-pressure demand self-contained breathing apparatus (SCBA) or Supplied Air Respirator (SAR); MSA Ultralite, or equivalent.



Reasons for Upgrading or Downgrading Level of Protection	
Upgrade <sup>f</sup>	Downgrade
<ul style="list-style-type: none"> <li>• Request from individual performing tasks.</li> <li>• Change in work tasks that will increase contact or potential contact with hazardous materials.</li> <li>• Occurrence or likely occurrence of gas or vapor emission.</li> <li>• Known or suspected presence of dermal hazards.</li> <li>• Instrument action levels exceeded (when implemented).</li> </ul>	<ul style="list-style-type: none"> <li>• New information indicating that situation is less hazardous than originally thought.</li> <li>• Change in site conditions that decrease the hazard.</li> <li>• Change in work task that will reduce contact with hazardous materials.</li> </ul>

<sup>a</sup> Modifications are as indicated. JV III will provide PPE only to JV III employees. be determined by the SHSO.

<sup>b</sup> No facial hair that would interfere with respirator fit is permitted.

<sup>c</sup> Splash-shield areas are to

<sup>d</sup> Ear protection should be worn when conversations cannot be held at distances of 3 feet or less without shouting.

<sup>e</sup> Cartridge change-out schedule is at least every 8 hours (or one work day), except if relative humidity is > 85%, or if organic vapor measurements are > midpoint of Level C range --then at least every 4 hours. If encountered conditions are different than those anticipated in this HSP, contact the HSM. **Where JV II personnel are required to utilize a respirator to provide respiratory protection, JV II personnel shall receive respiratory protection awareness training. Contact the HSM to receive this training, prior to utilizing any respiratory protective device.**

<sup>f</sup> Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level D modified/Level C) is permitted only when the PPE requirements have been approved by the HSM, and an SHSO qualified at that level is present.



## 6.0 Air Monitoring/Sampling

### 6.1 Air Monitoring Specifications

Air Monitoring Equipment Specifications are listed in Table 6-1.

TABLE 6-1  
Air Monitoring Equipment Specifications

Instrument	Tasks	Action Levels <sup>a</sup>	Level of Protection or Action	Frequency <sup>b</sup>	Calibration
<b>Dust (Aersol) Monitor:</b> MIE pDR 100 or equivalent *  * it is anticipated that sediment will be oversaturated at the time of excavation and the likelihood that an aerosol monitor will be needed during sediment removal operations.	Any activity that generates airborne particulate (dust) that may potentially be above the action level.	No Visible Dust	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection	Observe site conditions for signs of visible dust and initiate active air monitoring when sustained visible dust conditions are observed during installation of ESC features, excavation, mechanical separation and loading soil identified for off-site disposal/re-use. Sustained shall be defined as conditions where dust is discharged from the site as a result of active work operations for 5 minutes or longer during any one hour period.	“Zero” instrument at least daily Dust-free area OR Z-bag with HEPA filter
		Visible Dust (initiate air monitoring to verify dust concentrations) > 1 mg/m <sup>3</sup>	Level D, Modified D1, or D2 as identified by Table 5-1 for dermal protection		
		< 1 mg/m <sup>3</sup>	Level C*  * <b>Suspend operations, institute dust control measures (with worker protection from exposure) until readings are below the action level. Contact the HSM before utilizing Level C PPE.</b>		
<b>CGI w/ LEL sensor</b>	Sediment Removal Operations	LEL < 4%	Level D, Modified D1, or D2 Continue Work.	Initially during task for exposure assessment	Daily
		LEL >4%	Level D Modified D1, or D2, Evacuate Immediately. Allow vapors to dissipate. Continuous monitoring upon startup. If results persist immediately contact HSM for evaluation of PPE and/or other engineering control. **		
<b>CGI w/ CO sensor</b>	Sediment Removal Operations	CO < 35 ppm	Level D, Modified D1, or D2 Continue Work.	Initially during task for exposure assessment	Daily
		CO > 35 ppm	SEE ** ABOVE		
<b>CGI w/ H<sub>2</sub>S sensor</b>	Sediment Removal Operations	H2S < 10 ppm	Level D Continue Work.	Initially during task for exposure assessment	Daily
		H2S > 10 ppm	SEE ** ABOVE		
<b>CGI w/ O<sub>2</sub> sensor</b>	Sediment Removal Operations	O <sub>2</sub> >19.5% but < 23.5%	Level D Continue Work.	Initially during task for exposure assessment	Daily
		O <sub>2</sub> <19.5 or >23.5%	SEE ** ABOVE		

<sup>a</sup> Action levels apply to sustained breathing-zone measurements above background.

<sup>b</sup> The exact frequency of monitoring depends on field conditions and is to be determined by the HSO; generally, every 5 to 15 minutes if acceptable; more frequently may be appropriate. Monitoring results should be recorded. Documentation should include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (e.g., “Breathing Zone/MW-3”, “at surface/SB-2”, etc.).

<sup>c</sup> If the measured percent of O<sub>2</sub> is less than 10, an accurate LEL reading will not be obtained. Percent LEL and percent O<sub>2</sub> action levels apply only to ambient working atmospheres, and not to confined-space entry. More-stringent percent LEL and O<sub>2</sub> action levels are required for confined-space entry.

<sup>d</sup> Refer to SOP HS-10 for instructions and documentation on radiation monitoring and screening.

<sup>e</sup> Noise monitoring and audiometric testing also required.



## 6.2 Calibration Specifications

(Refer to the respective manufacturer's instructions for proper instrument-maintenance procedures)

Air Monitoring equipment calibration specifications are listed in Table 6-2.

TABLE 6-2  
Air Monitoring Equipment Calibration Specifications

Instrument	Gas	Span	Reading	Method
<b>Dust Monitor:</b> MIE PDR 1200, Dust Trak 8520 or equivalent	Dust-free air	Not applicable	0.00 mg/m <sup>3</sup> in "Measure" mode	Dust-free area OR Z-bag with HEPA filter
<b>CGI w/ LEL</b>	Mixed Gas	RF = 1.0	50 ppm	1.5 lpm reg T-tubing/ tedlar bag
<b>CGI w/ H<sub>2</sub>S</b>	Mixed Gas	RF = 1.0	25 ppm	1.5 lpm reg T-tubing/ tedlar bag
<b>CGI w/ CO</b>	Mixed Gas	RF = 1.0	50 ppm	1.5 lpm reg T-tubing/ tedlar bag
<b>CGI w/ O<sub>2</sub></b>	Mixed Gas	RF = 1.0	20.9 % O <sub>2</sub>	1.5 lpm reg T-tubing/ tedlar bag or "fresh air calibration" depending on meter



## 7.0 Decontamination

Due to the nature/type of the work to be executed and concentration of identified site COCs, it is not anticipated that workers would be exposed to site COC's in excess of established Occupational Exposure Limits (OELs) (i.e. negative exposure), assuming that proper personal hygiene practices are exercised by site personnel. These practices include but are not limited to the following: 1) Eating, drinking, smoking and tobacco use shall only be conducted in designated areas and not in areas where there is any exposure to hazardous material/waste, flammable/ combustible liquids and gases may exist and 2) wash hands and face, if applicable, before eating, drinking, smoking or using tobacco 3) shower as soon as feasible after completing field activities.

It is anticipated that site workers will execute tasks utilizing Level D or Modified Level D PPE. Where Modified Level D PPE (or Level C PPE) is utilized, site personnel must execute proper decontamination procedures. Proper decontamination procedures will be required to ensure negative worker exposure to any identified constituents of concern or hazardous materials. The SHSO must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SHSO. The SHSO must ensure that procedures are established for disposing of materials generated on the site.

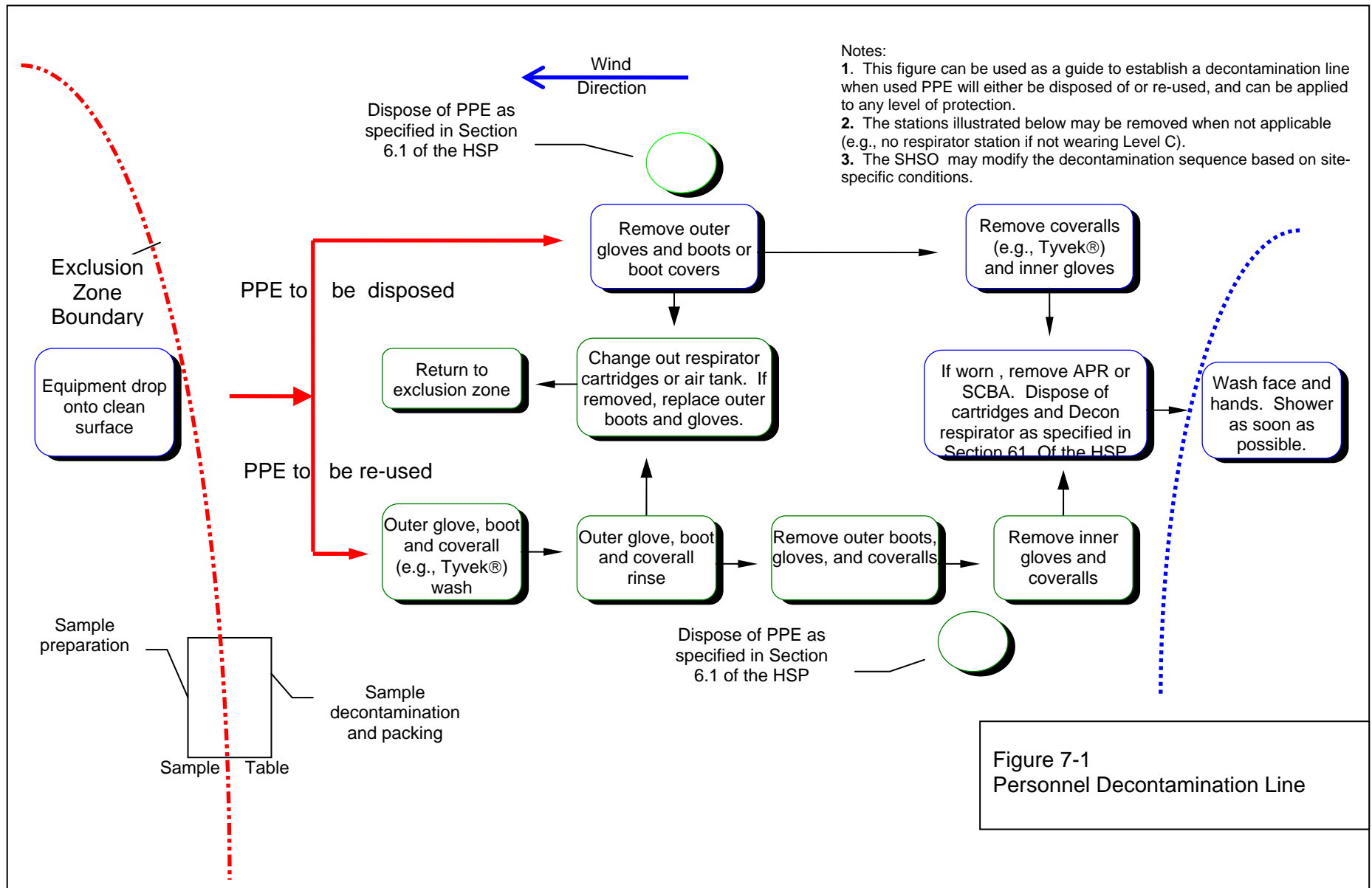
### 7.1 Decontamination Specifications

Personnel	Sample Equipment	Heavy Equipment
<ul style="list-style-type: none"> <li>• Boot wash/rinse</li> <li>• Glove wash/rinse</li> <li>• Outer-glove removal</li> <li>• Body-suit removal</li> <li>• Inner-glove removal</li> <li>• Respirator removal</li> <li>• Hand wash/rinse</li> <li>• Face wash/rinse</li> <li>• Shower ASAP</li> <li>• Dispose of PPE in municipal trash, or contain for disposal</li> <li>• Dispose of personnel rinse water to facility or sanitary sewer, or contain for offsite disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Wash/rinse equipment</li> <li>• Solvent-rinse equipment</li> <li>• Contain solvent waste for offsite disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Power wash</li> <li>• Steam clean</li> <li>• Dispose of equipment rinse water to facility or sanitary sewer, or contain for offsite disposal</li> </ul>

### 7.2 Diagram of Personnel-Decontamination Procedures

Figure 7-1 is a flow chart of the Personnel Decontamination Line. No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. The SHSO should establish areas for eating, drinking, and smoking. Contact lenses are not permitted in exclusion or decontamination zones. In all cases, whether Level D modified or Level C PPE is required, it is essential for workers to maintain good positive personal hygiene practices.







## 8.0 Spill-Containment Procedures

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Sorbent material will be maintained in the support zone. Incidental spills will be contained with sorbent and disposed of properly.

### 8.1 Procedure for Containing/Collecting Spills

The initial response to any spill or discharge will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary response.

If for some reason a chemical spill is not contained within a dike or sump area, an area of isolation will be established around the spill. The size of the area will generally depend on the size of the spill and the materials involved. If the spill is large (greater than 55 gallons) and involves a tank or a pipeline rupture, an initial isolation of at least 100 ft in all directions will be used. Small spills (less than or equal to 55 gallons) or leaks from a tank or pipe will require evacuation of at least 50 ft in all directions to allow cleanup and repair and to prevent exposure. When any spill occurs, only those persons involved in overseeing or performing emergency operations will be allowed within the designated hazard area. If possible the area will be roped or otherwise blocked off.

If the spill results in the formation of a toxic vapor cloud (by reaction with surrounding materials or by outbreak of fire) and its release (due to high vapor pressures under ambient conditions), further evacuation will be enforced. In general, an area at least 500 feet wide and 1,000 feet long will be evacuated downwind if volatile materials are spilled. (Consult the DOT Emergency Response Guide for isolation distances for listed hazardous materials.)

If an incident may threaten the health or safety of the surrounding community, the public will be informed and possibly evacuated from the area. The on-site emergency coordinator will inform the proper agencies in the event this is necessary. An Emergency Contact List is provided in Attachment 14.

As called for in regulations developed under the comprehensive Environmental Response Compensation Liability Act of 1980 (Superfund), JV III's practice is to report a spill of a pound or more of any hazardous material for which a reportable quantity has not been established and which is listed under the Solid Waste Disposal Act, Clean Air Act, Clean Water Act, or TSCA. TMS also follows the same practice for any substances not listed in the Acts noted above but which can be classified as a hazardous waste under Resource Conservation and Recovery Act (RCRA).

Cleanup personnel take the following measures:

- Review product specific MSDSs (Attachment 6) to determine the appropriate neutralization clean-up process for spilled materials.
- Ensure all unnecessary persons are removed from the hazard area.
- Put on protective clothing and equipment.



- If a flammable material is involved, remove all ignition sources, and use spark- and explosion-proof equipment for recovery of material. Ensure pumps are properly grounded, as may be applicable.
- Remove all surrounding materials that could be especially reactive with materials in the waste. Determine the major components in the waste at the time of the spill.
- If wastes reach a sanitary sewer, dam the outfall by using sand, earth, sandbags, etc. Pump this material out into a temporary holding tank or drums as soon as possible.
- Place all small quantities of recovered liquid wastes (55 gallons or less) and contaminated soil/absorbent media into drums for transportation/recycling to an approved disposal facility.
- Spray the spill area with foam, if available, if volatile emissions may occur.
- Apply appropriate spill control media (e.g. clay, sand, lime, absorbent pads etc.) to absorb discharged liquids and residual materials.
- For large spills, establish diking around leading edge of spill using booms, sand, clay or other appropriate absorbent material. If possible, use diaphragm pump to transfer discharged liquid to drums or holding tank.



## 9.0 Site-Control Plan

---

### 9.1 Site-Control Procedures

(Reference SOP HS-11, *Site Control*)

- Project managers and are to
  - 1) Evaluate and ensure worker safety in remote/secluded work areas,
  - 2) Confirm if potentially dangerous activities (i.e. coincidence of hunting seasons, live ordinance use, military field exercises/activities, transfer of dangerous or explosive cargo/materials, location of explosive arc zones etc.) could be occurring in or adjacent to any JV II work areas that may jeopardize worker health and safety and
  - 3) Reschedule field activities when potentially dangerous activities are not occurring adjacent to JV II work locations. Ensure proper two communications with workers in remote work areas. Utilize buddy system. The SHSO, or designee, will conduct a site safety briefing (see below) before starting field activities or as tasks and site conditions change.
  - 4) Evaluate the requirements to establish Site Entry Control Points, Exclusions Zones, Contaminant Reduction Zones to meet the requirements of a project specific Explosive Safety Submission (ESS) or applicable standards of 29CFR1910.120/29CFR1926.65.
- Topics for briefing on site safety: general discussion of Health and Safety Plan, site-specific hazards, locations of work zones, PPE requirements, equipment, special procedures, emergencies.
- The SHSO records attendance at safety briefings in a logbook and documents the topics discussed.
- Ensure that applicable JV II personnel have received the BBLPS Training
- Execute CSE procedures as may be required for site operations.
- Understand if there is a potential of being exposed to hazardous chemicals. If yes, what precautions/training are required?
- Establish support, decontamination, and exclusion zones. Delineate with flags or cones as appropriate. Support zone should be upwind of the site. Use access control at entry and exit from each work zone.
- Know how an emergency should be reported.
- Identify exact facility location and position (where possible) when contacting EMS/Fire Dispatch.
- Have readily available copy of the Hospital Route Map.
- Establish onsite communication consisting of the following:



- Line-of-sight and hand signals
  - Air horn
  - Two-way radio or cellular telephone if available
- Designate an emergency evacuation route.
- Designate an evacuation assembly area.
- Establish offsite communication.
- Establish and maintain the “buddy system.”
- Know how, what, when injuries/accidents are reported and treated.
- Initial air monitoring is conducted by the SHSO in appropriate level of protection.
- The SHSO is to conduct periodic inspections of work practices to determine the effectiveness of this plan – refer to Sections 2 and 3. Deficiencies are to be noted, reported to the HSM, and corrected.

### **9.1.1 Site Control for MEC/MPP or Other Restricted Access Areas**

(Reserved)

#### **9.1.1.1 Site Entry Control Points (ECPs)**

(Reserved)

#### **9.1.1.2 Exclusion Zone**

(Reserved)

#### **9.1.1.3 Contamination Reduction Zone**

(Reserved)

#### **9.1.1.4 Support Zone**

(Reserved).

## **9.2 HAZWOPER Compliance Plan**

(Reference SOP HS-19, *Site-Specific Written Safety Plans*)

Certain parts of the site work are covered by state or federal HAZWOPER standards and therefore require training and medical monitoring. Anticipated HAZWOPER tasks (Section 1.4 or otherwise determined) might occur consecutively or concurrently with respect to non-HAZWOPER tasks. This section outlines procedures to be followed when approved activities specified in Section 1.5 do not require 24- or 40-hour training. Non-HAZWOPER-trained personnel also must be trained in accordance with all other state and federal OSHA requirements.

- In many cases, air sampling, in addition to real-time monitoring, must confirm that there is no exposure to gases or vapors before non-HAZWOPER-trained personnel are



allowed on the site, or while non-HAZWOPER-trained staff are working in proximity to HAZWOPER activities. Other data (e.g., soil) also must document that there is no potential for exposure. The HSM must approve the interpretation of these data. Refer to Sections 3 and 6 for contaminant data and air sampling requirements, respectively.

- When non-HAZWOPER-trained personnel are at risk of exposure, the SHSO must post the exclusion zone and inform non-HAZWOPER-trained personnel of the:
  - Nature of the existing contamination and its locations
  - Limitations of their access
  - Emergency action plan for the site
- Periodic air monitoring with direct-reading instruments conducted during regulated tasks also should be used to ensure that non-HAZWOPER-trained personnel (e.g., in an adjacent area) are not exposed to airborne contaminated media.
- When exposure is possible, non-HAZWOPER-trained personnel must be removed from the site until it can be demonstrated that there is no longer a potential for exposure to health and safety hazards.



## 10.0 Emergency Response Plan

---

(Reference SOP HS-12, *Emergency Response*)

### 10.1 Pre-Emergency Planning

The SHSO performs the applicable pre-emergency planning tasks before starting field activities and coordinates emergency response with JV II on-site parties, the facility, and local emergency-service providers as appropriate.

- Review the facility emergency and contingency plans where applicable.
- Determine what on-site communication equipment is available (e.g., two-way radio, air horn).
- Determine what off-site communication equipment is needed (e.g., nearest telephone, cell phone).
- Confirm and post emergency telephone numbers, evacuation routes, assembly areas, and route to hospital; communicate the information to on-site personnel.
- Review changed site conditions, on-site operations, and personnel availability in relation to emergency response procedures.
- Where appropriate and acceptable to the client, inform emergency room and ambulance and emergency response teams of anticipated types of site emergencies.
- Designate one vehicle as the emergency vehicle; place hospital directions and map inside; keep keys in ignition during field activities.
- Inventory and check site emergency equipment, supplies, and potable water.
- Communicate emergency procedures for personnel injury, exposures, fires, explosions, and releases.
- Rehearse the emergency response plan before site activities begin, including driving route to hospital.
- Brief new workers on the emergency response plan.

The SHSO will evaluate emergency response actions and initiate appropriate follow-up actions.

### 10.2 Emergency Equipment and Supplies

The SHSO should mark the locations of emergency equipment on the site map and post the map. Equipment and locations are listed below.



Emergency Equipment and Supplies	Location
20 LB (or two 10-lb) fire extinguisher (A, B, and C classes)	Support Zone/Heavy Equipment
First aid kit	Support Zone/Field Vehicle
Eye Wash	Support & Decon Zone/Field Vehicle
Potable water	Support & Decon Zone/Field Vehicle
Bloodborne-pathogen kit	Support Zone/Field Vehicle
Additional equipment (specify): Mobile phone, 2.5 lb fire extinguisher (A, B, and C classes)	Support Zone/Field Vehicle

### 10.3 Incident Reporting, Investigation and Response

For any accident meeting the definition of **Recordable Occupational Injuries or Illnesses or Significant Accidents**, the Atlantic Division, NAVFAC Contracting Officer and Navy Technical Representative (NTR) will be notified by the overall JV II Project Manager soon as practical, **but not later than four hours after occurrence**. In the event that the overall JV Project Manager is not available, notification maybe made by the designated JV II individual responsible for site operations, but **only** after consultation with the JV II Program or Deputy Program Managers. All other incidents must be reported to Atlantic Division, NAVFAC within 24 hours of incident occurrence. Only authorized JV II personnel (Program Manager and/or Deputy Program Manager, overall Project Manager) may make notification to NAVFAC Atlantic Division regarding project accidents, injuries or illnesses.

Therefore, in order for the incident to be assessed for reportability purposes, it is imperative that according to JV II requirements, **all personal injuries, near misses, or property damage incidents involving JV II or subcontractor project personnel be reported IMMEDIATELY to the chain of command personnel identified in Section 10.7 and Attachment 14 of this HSP**. The following information shall be provided.

Date and time of incident  
 Project name and project number  
 Name and worker classification  
 Extent of known injuries  
 Level of medical attention  
 Injury cause

A written incident investigation will be performed and submitted to the HSM within 24 hours of incident occurrence by the completing the Incident Report, Near-Loss Investigation and Root Cause Analysis provided in the HSP Attachments.

In fires, explosions, or chemical releases, actions to be taken include the following:

- Shut down JV II operations and evacuate the immediate work area.
- Notify appropriate response personnel.
- Account for personnel at the designated assembly area(s).
- Assess the need for site evacuation, and evacuate the site as warranted.



Instead of implementing a work-area evacuation, note that small fires or spills posing minimal safety or health hazards may be controlled.

## 10.4 Emergency Medical Treatment

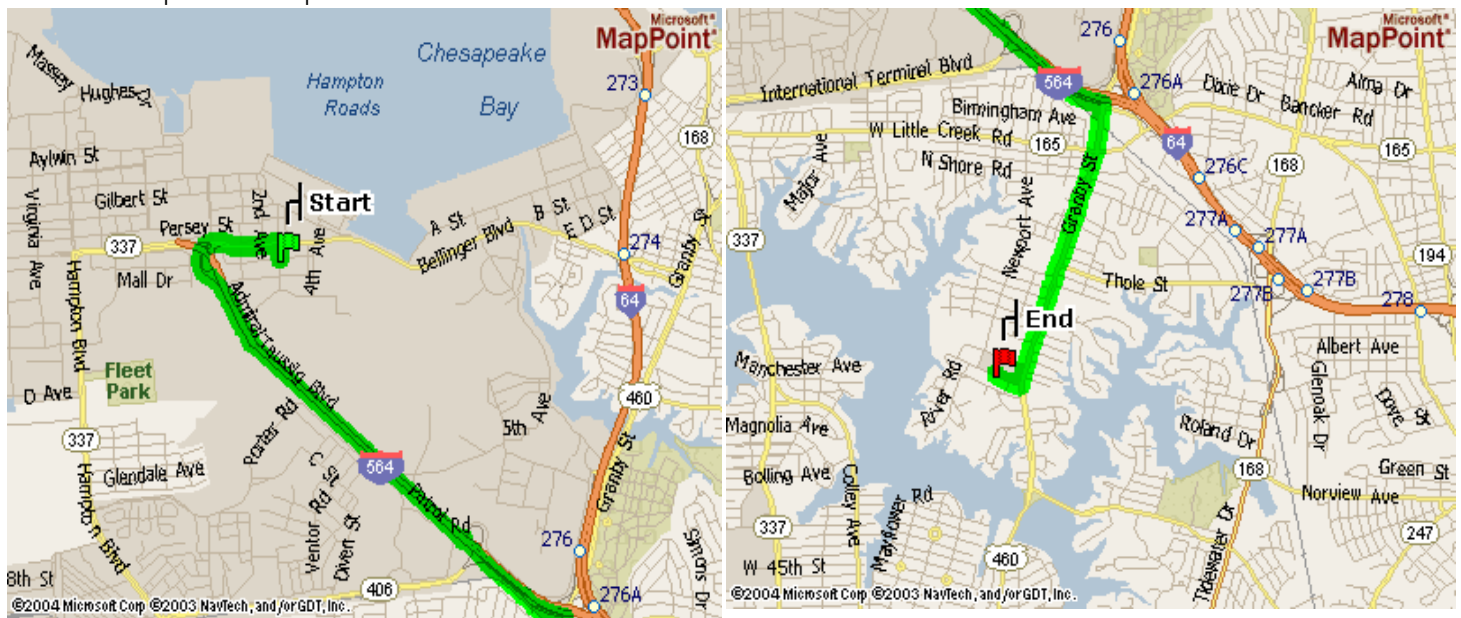
The procedures listed below may also be applied to non-emergency incidents. JV II employee injuries and illnesses must be reported to the Human Resources contact in Attachment 14. If there is doubt about whether medical treatment is necessary, or if the injured person is reluctant to accept medical treatment, contact the JV II medical consultant, depending on whose employee is injured. During non-emergencies, follow these procedures as appropriate.

- Notify appropriate emergency response authorities (e.g., 911).
- The SHSO will assume charge during a medical emergency until the ambulance arrives or until the injured person is admitted to the emergency room.
- Prevent further injury.
- Initiate first aid and CPR where feasible.
- Get medical attention immediately.
- Perform decontamination where feasible; lifesaving and first aid or medical treatment take priority.
- Make certain that the injured person is accompanied to the emergency room.
- When contacting the medical consultant, give your name and telephone number, the name of the injured person, the extent of the injury or exposure, and the name and location of the medical facility where the injured person was taken.
- Report incident as outlined in Section 10.3.

A map showing the route to the hospital is shown on Figure 10-4.



FIGURE 10-4  
Hospital Route Map – Naval Station Norfolk



Bon Secours De Paul Medical Center  
150 Kingsley Lane  
Norfolk, Virginia 23505  
(757) 889-5000

### Directions to Hospital

- 1: Start out going North on 3RD AVE toward BELLINGER BLVD. <0.1 miles
- 2: Turn LEFT onto BELLINGER BLVD. 0.3 miles
- 3: Merge onto ADMIRAL TAUSSIG BLVD/I-564 E. 2.0 miles
- 4: Take the US-460/GRANBY ST exit. 0.6 miles
- 5: Turn RIGHT onto US-460 W/GRANBY ST. 1.4 miles
- 6: Turn RIGHT onto KINGSLEY LN. 0.1 miles
- 7: End at 150 Kingsley Ln Norfolk VA

- Local Hospital #:	757-889-5000	- Off Base Emergency ;911
- Medical Emergency:	911	
- Fire Emergency:	757-444-3333	- On Base Emergency 757-444-3333
- Police Emergency:	757-444-2324	



## 10.5 Evacuation

- Evacuation routes and assembly areas (and alternative routes and assembly areas) are specified on the site map.
- Evacuation route(s) and assembly area(s) will be designated by the SHSO before work begins.
- Personnel will assemble at the assembly area(s) upon hearing the emergency signal for evacuation.
- The SHSO and a “buddy” will remain on the site after the site has been evacuated (if safe) to assist local responders and advise them of the nature and location of the incident.
- The SHSO will account for all personnel in the onsite assembly area.
- A designated person will account for personnel at alternate assembly area(s).
- The HSO will write up the incident report as soon as possible after it occurs and submit a report to the Corporate Health and Safety Manager.
- A Hurricane Preparedness Plan is included as Attachment 16 to be followed in the event of severe weather.

## 10.6 Evacuation Signals

Evacuation signals are listed below.

Signal	Meaning
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

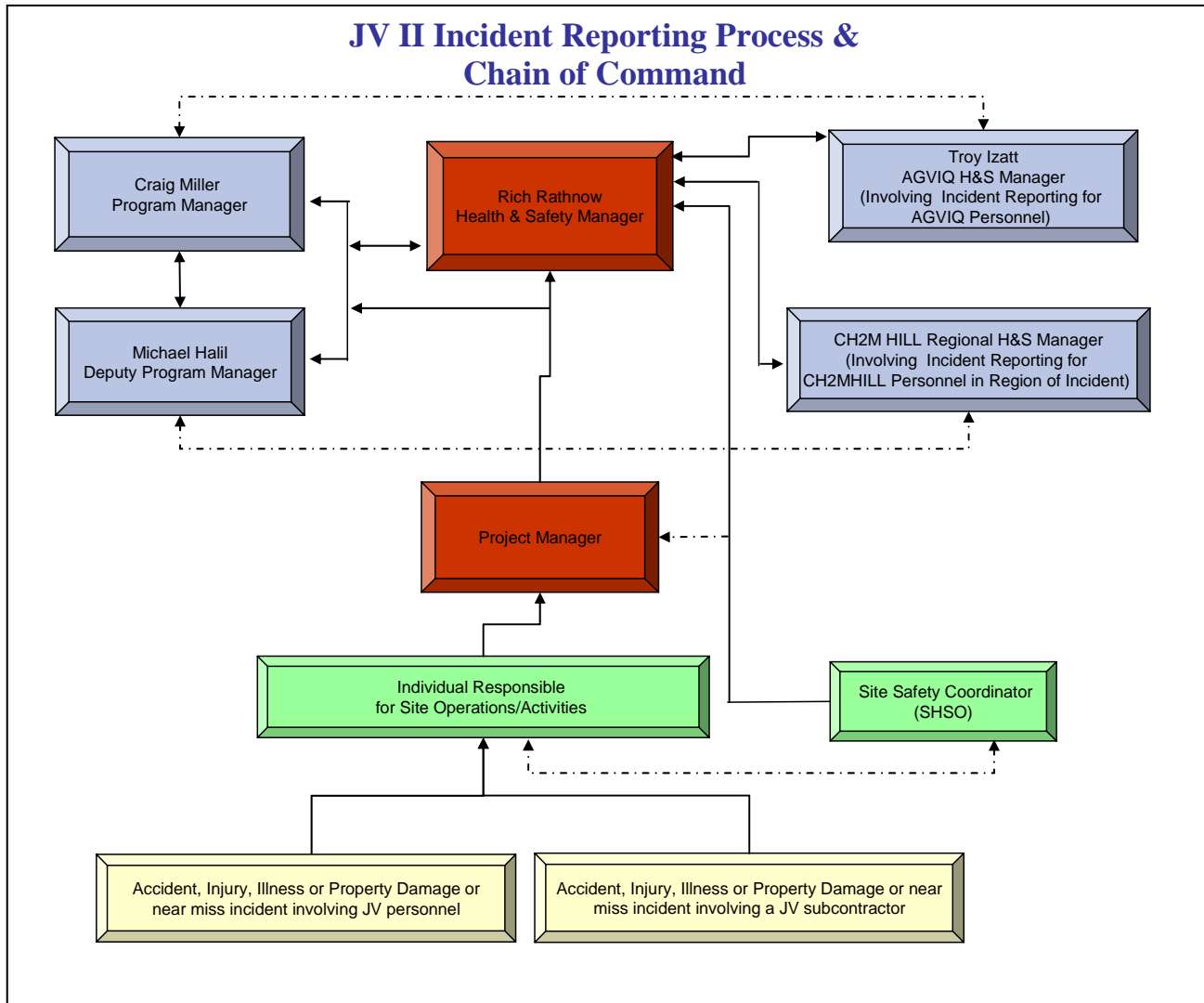
## 10.7 Incident Notification and Reporting

- Upon any project incident (fire, spill, accident, injury/illness, near miss, property damage, death, etc.), immediately notify the Project Manager and HSM. Figure 10-7 below identifies the JV II Incident Reporting Process.
- For JV II work-related injuries or illnesses, contact the respective resources on the emergency contact list in Attachment 14.0 of this HSP. For JV II incidents the SHSO administrator completes an Incident Report Form (IRF). IRF must be completed within 24 hours of incident.



- For JV II subcontractor incidents, complete the Subcontractor Accident/Illness Report Form and submit to the HSM.
- Notify and submit reports to client as required in contract.

FIGURE 10-7





## 11.0 Approval

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This site-specific Health and Safety Plan has been written for use by JV II only. JV II claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific site conditions, purposes, dates, and personnel specified and must be amended if those conditions change.

### 11.1 Original Plan

**Prepared By:** Glen Jackson

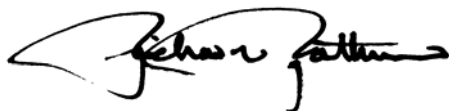
**Date:** 08-02-07



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**Approved By:** Richard Rathnow

**Date:** 08-16-2007



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### 11.2 Revisions

**Revisions Made By:** Glen Jackson

**Date:** 11/9/07

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**Revisions to Plan:** Update Project Roles & Responsibilities in Section 2.0. Add information to chainsaw use in section 3.2.2 for ground personnel working around chainsaws/drop zones. Update section 10-3 Incident Reporting Process, Figure 10-7 JV II Incident Reporting Process and Chain of Command, complete project AHAs included in Attachment 10, and make administrative changes to Attachment 15, Accident Prevention Plan.

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**Revisions Approved By:**

**Date:**

Not Applicable when prepared by the JV H&S POC and HSP revisions are non-safety critical and do not modify Industrial Hygiene, PPE, air monitoring/worker exposure information.



## Attachment 1

### Employee Signoff Form



## Health and Safety Plan

### Task Order:

[illegible]



## Attachment 2

### Subcontractor H&S Tracking Form



Subcontractor H&S Tracking Form
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<b>Project Name:</b>	<b>Task Number:</b>	<b>Date:</b>
----------------------	---------------------	--------------

<b>Project Name:</b>	<b>Task Number:</b>	<b>Date:</b>
----------------------	---------------------	--------------

<b>Project Name:</b>	<b>Task Number:</b>	<b>Date:</b>
----------------------	---------------------	--------------

[illegible]

- |     |  |
|-----|--|
| 22. | Hazard Specific Training may include: Hazcom, asbestos, lead, fall protection, electrical, lock-out tag-out, drilling, demolition, etc.    |
| 23. | Equipment Specific Training may include: Industrial (fork) truck, aerial lift, crane, portable extinguisher, respirator, scaffolding, etc. |
| 24. | Medical Clearance documents must <b>not</b> include actual medical reports. Only accept a signed physician's statement of fitness to work. |



## Attachment 3

### Project H&S Forms/Permits



## EQUIPMENT INSPECTION FORM

This form will be used to document JV II's earthmoving equipment inspections. Earthmoving equipment will be inspected each day and shift prior to use. All components will be inspected for damage and proper operation. Any component failing the inspection will be corrected prior to earthmoving equipment use. Check each box after passing inspection and initial bottom of form each day.

Equipment Name: \_\_\_\_\_ Identification #: \_\_\_\_\_ Week of: \_\_\_\_\_

INSPECTION ITEM	Mon	Tue	Wed	Thu	Fri	Sa	Sun
<b>Visual Checks</b>							
Operating manual – present							
Controls - labeled as to their function, visible and legible, safety latches/guards present							
Tires/tracks – proper inflation/tension, not excessively worn or damaged							
Fluid levels/leaks - engine, transmission, hydraulic, radiator, swing motor and PTO oils.							
Lubrication - to the manufacturer's specifications							
Air filter gauge - gauge is not in the red zone.							
Hydraulics – no fluid leaks, connections tight, hoses, cylinders free of damage.							
Hoses/belts – held securely, not loose or rubbing, no excessive wear or crimping							
Fuel system - tank free of damage, all valves/hoses secure, no leaks							
Body & ground-engaging tools – no damage, cracks, bends, or excessive wear.							
Cylinders/articulation joints– no worn pins, loose connections or other damage.							
Roll-over protective structures (ROPS) - no damage, no cracks or bends							
Seat belt/bar – required unless operator stands or no ROPS							
Handrails, steps, platforms – clean, free from grease, oil, clear of obstructions.							
Cab glass – safety glass, clean, no cracks or visible distortion							
Mirrors – properly adjusted, no cracks or visible distortion							
Windshield wipers, fluid, and defroster - functioning							
Machine guards – present and in good condition							
1. Fire extinguisher – present and charged							
<b>Operational Checks – check items through normal maneuvers</b>							
Horn & back-up alarm – operating and distinguishable from surrounding noise							
Lights, directional signals, and brake lights - functioning							
Gauges/indicators – visible and working properly							
Operating controls - lift and tilt functioning properly							
Outriggers, if present – functioning properly							
Accelerator - even acceleration, does not stick							
Brakes (service & parking) - brings to complete stop, holds in fixed position							
Steering – responsive, minimal looseness							
Exhaust system – guarded if potential for contact, no signs of sparks/leaks							
<b>Inspector's Initials</b>							



# EQUIPMENT OPERATOR EVALUATION FORM

Page 1 of 2

JV II employees who are required to operate earthmoving equipment will be evaluated and approved as qualified earthmoving equipment operators by an authorized JV II Earthmoving Equipment Operator Evaluation Designated Persons (DP).

This form will be used by the DP to assess, approve, and document the qualifications of JV 1 employees who are required to operate earthmoving equipment.

Employee (Operator) Name: \_\_\_\_\_ JV 1 employee #: \_\_\_\_\_

JV II Company: \_\_\_\_\_ Business Group: \_\_\_\_\_ Region: \_\_\_\_\_

Type of equipment to be operated: \_\_\_\_\_

## 1. Background Review

Resume and other documentation (training certificates) will be reviewed and verified with previous employers. The individual will also possess a valid driver's license. This review should take place prior to hiring.

☐ Background Review found to be adequate. Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ DP initials: \_\_\_\_\_

## 2. Classroom Evaluation

- a. Employee will read and understand the manufacturer's Equipment Operation Manual for the specific piece of equipment to be operated.
- b. Employee will read and understand the CH2M HILL *Earthmoving Equipment* (HSE-306) and *Excavations* (HSE-307) Standards of Practice.
- c. DP will discuss safe operating practices with the employee.
- d. Employee will pass JV II's written earthmoving equipment operator exam. (See Attachment 4 for exam guidelines)

☐ Classroom Evaluation successfully completed. Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ DP initials: \_\_\_\_\_

## 3. Field Evaluation

### a. Equipment Awareness, Inspection and Maintenance

The DP will observe the employee perform a daily inspection using the Earthmoving Equipment Inspection Form. The employee will demonstrate the ability to recognize deficient conditions that could affect the safe operation of the equipment. In addition, the operator will demonstrate awareness of the following:

- ☐ Location of vital fluid reservoirs
- ☐ Location of all lubrication points
- ☐ Proper fueling procedures
- ☐ Location and function of safety disabling devices (if equipped)
- ☐ Location and function of safety devices (fire extinguisher, back-up alarm, seat belt/bar, guards)
- ☐ Location of manufacturer warning labels, weight of equipment, and lift capacities labels
- ☐ Location and function of all gauges, indicators and controls (horn, lights, mirrors, etc.)
- ☐ Acceptable conditions for passing items during daily inspections
- ☐ Periodic maintenance requirements



## EQUIPMENT OPERATOR EVALUATION FORM

Page 2 of 2

### b. Equipment Operation

The DP will observe the employee operating the equipment through normal maneuvers. The employee will demonstrate the ability to operate the equipment safely and in accordance with the manufacturer's guidelines.

- ☐ Demonstrates ability to safely start equipment in preparation for use (proper start-up sequence followed)
- ☐ Understands function and proper appearance of all gauges and indicators
- ☐ Understands location and use of all equipment controls
- ☐ Checks front, side, and rear of equipment for pedestrians, traffic and obstructions
- ☐ Demonstrates smooth and safe equipment travel
- ☐ Demonstrates smooth and safe control operations
- ☐ Demonstrates safe loading and binding of equipment for travel
- ☐ Demonstrates normal shut-down procedures
- ☐ Demonstrates emergency shut-down procedures
- ☐ Demonstrates safe parking and storage of equipment
  
- ☐ Field Evaluation successfully completed. Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ DP initials: \_\_\_\_\_

### Operator Acknowledgement

I have reviewed and understand all of the information listed above. I also understand that as an operator of this equipment, I am responsible for daily inspections and maintenance as well as the safe and efficient operation of the equipment listed above.

\_\_\_\_\_  
Operator Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

### Qualification approval

The employee has completed the earthmoving equipment operator evaluation process and is qualified to operate the type of earthmoving equipment identified above.

\_\_\_\_\_  
DP Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
HS&E Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

A copy of this evaluation form will be maintained in the project file and the original sent to the HS&E department for retention.





# Stop Work Order Form

REPORT PREPARED BY:

Name:	Title:	Signature:	Date:

---

## ISSUE OF NONPERFORMANCE

<b>Description:</b> _____ _____ _____ _____ _____ _____	<b>Date of Nonperformance:</b> _____  
--	---

## SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	Title:	Signature:	Date:

---

*\* Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.\**

## SUBCONTRACTOR'S CORRECTIVE ACTION

<b>Description:</b> _____ _____ _____ _____ _____ _____	<b>Date of Corrective Actions:</b> _____  
--	---

## SUBCONTRACTOR SIGNATURE OF CORRECTION:

Name:	Title:	Signature:	Date:



## Attachment 4

### Project Activity Self-Assessment Checklists



## H&S Self-Assessment Checklist—AERIAL LIFTS

Page 1 of 3

This checklist shall be used by AGVIQ-CH2M HILL Joint Venture II (JV II) personnel **only** and shall be completed at the frequency specified in the project's HSP.

This checklist is to be used at locations where: 1) JV II employees are using aerial lifts and/or 2) JV II provides oversight of subcontractor personnel who are using aerial lifts.

THE Safety Coordinator (SC) may consult with subcontractors when completing this checklist, but shall not direct the means and methods of aerial lift use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Location: \_\_\_\_\_ PM: \_\_\_\_\_

Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JV II employee use of aerial lifts  
☐ Evaluate a JV II subcontractor's compliance with aerial lift requirements

Subcontractors Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-41

### SECTION 1

#### **PERSONNEL SAFE WORK PRACTICES (3.1)**

**Yes   No   N/A   N/O**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Only authorized and trained personnel operating aerial lifts                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Aerial lifts inspected by the operator prior to use                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Lift controls tested by the operator each day prior to use                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Personnel wearing full body harness with lanyard attached to boom or platform         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Lanyards not attached to adjacent structures or equipment while in aerial lift        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Personnel standing firmly on the floor of lift platform                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Personnel remain in the platform at all times and do not climb to adjacent structures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



**SECTION 2****Yes    No    N/A    N/O****GENERAL (3.2.1)**

- 8. Standard guardrail or equivalent protection provided on lift platform
- 9. Aerial lifts provided with upper and lower controls.
- 10. Lower controls operated only with permission of personnel in lift, unless emergency
- 11. Lift controls properly marked and legible, and capacity rating posted on lift
- 12. Modifications to aerial lift certified in writing by manufacturer

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**AERIAL LIFT POSITIONING (3.2.2)**

- 13. Aerial lifts positioned on firm, level surface with brakes set
- 14. Wheel chocks used on inclines
- 15. Outriggers positioned on solid surfaces or cribbing when used
- 16. Safe clearance distance maintained while working near overhead powerlines
- 17. Safe clearance distance maintained while travelling under overhead powerlines
- 18. Aerial lifts not moved when boom is elevated and personnel are working in platforms
- 19. Boom is properly cradled and outriggers stowed prior to moving aerial lift for travel

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**AERIAL LIFT OPERATION (3.2.3)**

- 20. Safe operating manual should be available for review and use by aerial lift operators
- 21. Aerial lift operators know boom and basket load limits and do not exceed them
- 22. Aerial lift platforms are free of slippery conditions
- 23. Personnel not standing or working below aerial lift operations
- 24. Warning signs or barricades provided under aerial lift operations
- 25. Counterweight swing radius barricaded or flagged
- 26. Aerial lifts not being used as cranes
- 27. Platforms free of attachments such as cables, wires, chains, or ropes
- 28. Aerial lifts not operated in winds exceeding 30 miles per hour
- 29. Platform foot switch physically operated and not mechanically blocked or by-passed
- 30. Insulating portion of aerial lift is not altered in any manner
- 31. Aerial lifts used indoors have exhaust properly vented to control carbon monoxide exposure

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator \_\_\_\_\_ Date \_\_\_\_\_



## HS&E Self-Assessment Checklist - CHAINSAW OPERATIONS

Page 1 of 4

This checklist shall be used by AGVIQ-CH2M HILL Joint Venture II (JV II) personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) JV II employees are operating chainsaws, and/or 2) JV II is providing oversight of a subcontractor operating a chainsaw.

Safety Coordinators may consult with chainsaw subcontractors when completing this checklist, but shall not direct the means and methods of chainsaw operations nor direct the details of corrective actions. Chainsaw subcontractors shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Location: \_\_\_\_\_ PM: \_\_\_\_\_

Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JV II employee exposures to chainsaw hazards
  - ☐ Evaluate a JV II subcontractor's compliance with chainsaw HS&E requirements
- Subcontractor Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the excavation subcontractor. Section 2 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-49.

### SECTION 1

#### **SAFETY EQUIPMENT (2.3)**

1. Chainsaw equipped with spark arrestor and fully functioning chain brake
2. Chainsaw operator's manual readily available
3. Fully stocked first aid kit and multipurpose fire extinguisher available
4. Appropriate personal protective equipment available and worn
5. Clothing free of loose edges that could become entangled in the saw

**Yes   No   N/A   N/O**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### **PLANNING ACTIVITIES (2.5)**

6. Operators have read the chainsaw operator's manual
7. If aerial lifts to be used, aerial lift training completed
8. Daily safety briefing/meeting conducted with project personnel to discuss planned work
9. Immediate area surrounding operation cleared of obstructions
10. Companion maintained within calling distance of the chainsaw operator

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



<b>SECTION 1 (Continued)</b>				
	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
<b>INSPECTION (3.1.1)</b>				
11. Chain tension, sharpness, condition, and guide gap checked	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Chainsaw components checked for physical damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Chain does not rotate at idle with chain brake off	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Chain brake and stop switch operating correctly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Throttle trigger can not be engaged until throttle trigger lock out pressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>STARTING THE ENGINE (3.1.2)</b>				
16. Chainsaw operator's manual consulted for proper starting procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Saw placed on level ground with guide bar and chain off the ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Saw is not drop-started	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>SAFE OPERATION (3.1.3)</b>				
19. Chainsaw handles kept dry, clean, and free of oil or fuel mixture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Chainsaws held firmly with both hands and used right-handed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Operator standing to the left of the saw out of the plane of the chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Saw used between the waist and mid-chest level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Full throttle maintained while cutting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Operator aware of position of guide bar tip, does not contact tip with anything being cut	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Bumper spikes maintained as close to the object as possible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Operator aware of what is in the saw's downward path after the cut	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. No attempt to made to cut material that is larger than the guide bar of the saw	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Cuts avoided that will cause chain to jam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Non-metallic wedges used to prevent compression cuts from jamming the blade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Bystanders and helpers kept at a safe distance from operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Chainsaw not operated when fatigued	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Fire extinguisher present when operating the chainsaw in forest or brushy areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>ELECTRICAL CHAINSAW PRECAUTIONS (3.1.3)</b>				
33. Extension cords approved for outdoor use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Electrical cords equipped with third-wire grounding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Ground fault circuit interrupter (GFCI) used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Electrical cord positioned carefully to avoiding cutting with saw or trip hazard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Saw switched to the off position before completing electrical connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Saw unplugged before making adjustments and when not in use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>REFUELING THE ENGINE (3.1.4)</b>				
39. Fuel mixed in accordance with the manufacturer's recommendations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Fuel stored and transported in an approved safety container	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Engine shut off and allowed to cool before refueling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Fire extinguisher present during fueling and refueling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Area around refueling site free from combustible materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Smoking around fueling or refueling operations prohibited	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Funnel/flexible nozzle used to avoid spilling fuel on the engine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>TRANSPORT AND STORAGE (3.1.5)</b>				
46. Chainsaws carried with engine off and guide bar pointing to rear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Chain guard attached or placed in carrying case prior to transporting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Fuel tank drained and spark plug disconnected for long-term storage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Chainsaw placed in scabbard or secured to platform prior to transporting in aerial lift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



<b><u>SECTION 1 (Continued)</u></b>				
	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
<b>TOPPING UTILITY POLES (3.2.1)</b>				
50. JV II only topping utility poles from an aerial lift platform	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Aerial lifts operated safely (use aerial lift checklist in HS-41)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. Maximum length of pole section cut at one time does not exceed 2'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Pole tested for stray voltage with foreign voltage detector prior to cutting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Wiring, staples, nails, and other hardware removed within 4" of cut path	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. Saw handled between chest and waist level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. Personnel below pole safe distance from the fall area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. Cutting stopped leaving approximately one half inch of pole uncut	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58. Pole section removed manually by pulling cut section towards body	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
59. Cut pole sections lowered by rope or placed in aerial lift platform	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60. Rough edges hammered over after last cut	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>TREE FELLING (3.2.2)</b>				
61. JV II not felling trees beyond scope of SOP HS-49	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62. Power company contacted prior to felling trees within two tree lengths of power lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
63. Underground services checked that could be damaged when tree strikes the ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
64. Danger zone created two tree lengths from public areas, public removed from danger zone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
65. Personnel maintain a distance equal to two tree lengths of the tree being felled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
66. Intended direction of fall determined	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
67. Suitable escape path determined and maintained clear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
68. Equipment needed to prevent tree from sitting back on the saw determined and readily available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
69. Undercut notch cut on side of the tree in the direction of the fall line	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
70. Back cut started 1-2" inches above the undercut	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
71. As tree starts to fall, saw shut off and operator steps into the escape path	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>LIMBING STANDING TREES (3.2.3)</b>				
72. JV II not operating chainsaws where overhead electrical power lines may be contacted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
73. Only subcontractors with special training permitted to work around electrical power lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
74. Branches/limbs not cut above shoulder height	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
75. If limbing from a ladder, ladder secured in position and operator independently secured	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
76. Chainsaws not used from rope and harness unless operator has received specific training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>LIMBING FALLEN TREES (3.2.4)</b>				
77. No dead branches/other debris hanging above work that may fall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
78. Personnel do not attempt to manually pull over elevated trees, mechanical equipment used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
79. Springpoles cut safely, avoiding springback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
80. Small-size brush and saplings cut with hand saws or other cutting tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
81. Operator standing uphill of tree unless secured to prevent rolling/sliding downhill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
82. Cuts made with operator standing on the opposite side of the tree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
83. Operator keeping sight of saw tip, avoiding kickback	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
84. Debris removed periodically to maintain clear vision and movement around tree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>BUCKING TREES (3.2.5)</b>				
85. Operator standing uphill of tree unless secured to prevent rolling/sliding downhill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
86. Working from small end to larger to improve stability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
87. If tree on level ground, cutting from upper side and avoiding running chain into ground	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
88. If tree supported at one end, cutting from lower side one-third, then upper side	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
89. If tree supported at both ends, cutting from upper side one-third, then lower side	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## HS&E Self-Assessment Checklist - CHAINSAW OPERATIONS

Page 4 of 4

## SECTION 2

Complete this section for all items checked “No” in Section 1. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator: \_\_\_\_\_ Date: \_\_\_\_\_



## H&S Self-Assessment Checklist - FORKLIFTS

Page 1 of 3

This checklist shall be used by AGVIQ-CH2M HILL Joint Venture II (JV II) personnel **only** and shall be completed at the frequency specified in the project's HSP.

This checklist is to be used at locations where: 1) JV II employees are potentially exposed to hazards associated with forklift operations (complete Sections 1 and 3), and/or 2) JV II oversight of a subcontractor using forklifts is required (complete entire checklist).

The Safety Coordinator (SC) may consult with subcontractors using forklifts when completing this checklist, but shall not direct the means and methods of forklift operations nor direct the details of corrective actions. Subcontractors using forklifts shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Location: \_\_\_\_\_ PM: \_\_\_\_\_

Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JV II employee exposures to forklift hazards.
- ☐ Evaluate a JV II subcontractor's compliance with forklift H&S requirements.

Subcontractor's Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-48.

### SECTION 1

Yes   No   N/A   N/O

#### **PERSONNEL SAFE WORK PRACTICES (3.1)**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Personnel maintaining safe distance from operating forklifts.                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Positioning personnel in proximity to operating forklifts is avoided.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Personnel wearing high-visibility vests when close to operating forklifts.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Personnel approach operating forklifts safely.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Personnel only riding in seats equipped with seat belts.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Personnel not lifted or lowered by forklift unless approved for such use.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Personnel not positioned under elevated loads or forks.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Personnel avoid placing body between mast uprights or outside running lines during operation. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Personnel instructed not to approach forklift that has become electrically energized.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



	<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
<b>GENERAL (3.2.1)</b>					
10. Only certified personnel operating forklifts.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Daily safety briefing/meeting conducted with forklift operators.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Daily inspection of forklift and forklift accessories conducted before use.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Rated capacity of forklift visible to operator.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Modifications and attachments used approved by forklift manufacturer.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. High-lift forklifts have load backrest and overhead guard.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Seat belts are provided and used.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Backup alarm or spotter used when backing forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Operational horn provided and used as necessary.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Braking system capable of stopping capacity load.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Forklifts equipped with lights for low-light operations.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Carbon monoxide concentrations below PEL (50ppm).		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. At least one fire extinguisher available at the forklift operating area.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DESIGNATIONS AND LOCATIONS (3.2.2)</b>					
23. Atmosphere/locations classified as hazardous or non-hazardous.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Only properly designated forklifts used in hazardous locations.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>FORKLIFT OPERATION (3.2.3)</b>					
25. Forklift operated on safe roadways and grades.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Grades ascended/descended properly.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Forklift operated at safe speed, kept under control at all times		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Operators slow down and use horn at areas with obstructed vision.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Forklifts operating in reverse when load obstructs vision.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Operator keeping clear view of path of travel.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Forklifts do not pass other stopped vehicles at areas with obstructed vision.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Operators maintain safe distance from edge or ramps and platforms.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Overhead clearance maintained from installations.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Forklifts not parked within 8 feet of center of railroad tracks. Tracks crossed diagonally.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Forklift parked correctly when operator is dismounted.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Personnel platforms secured to forklift and shut off means provided on platform.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Trucks, trailers, railroad cars secured from movement before entering with forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Dockplates/bridgeplates secured before use; capacity not exceeded.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Truck, trailer, railroad car flooring checked for weakness before forklift boarding.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Operator handles only loads within rated capacity, adjusts for long or tall loads.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Loads are stabilized before forklift travel.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Operator using proper tilt to stabilize load, uses caution when tilting elevated loads.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. When two forklifts lift a load in unison, operators stay in close communication.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>FORKLIFT MAINTENANCE (3.2.4)</b>					
44. Forklifts with unsafe conditions removed from service and tagged as such to prevent use.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Forklifts repaired in designated, non-hazardous locations by authorized personnel.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Battery disconnected when repairing electrical systems.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Additions or omissions of parts not performed without manufacturer's approval.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Good housekeeping maintained on and around forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Water mufflers checked daily, kept at 75% full.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Forklifts removed from service if sparks, flames, or elevated operating temperatures occur.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Suspended forklifts or forklift parts are supported prior to work under or between.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. Forklifts properly parked before fueling/battery charging.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Fueling/battery charging conducted in designated, well-ventilated area.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Fueling/battery charging areas properly equipped for task.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. No smoking in fueling/battery charging areas.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. Spillage of fuel properly cleaned up before starting forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. Forklifts with fuel leaks taken out of service.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## H&S Self-Assessment Checklist - FORKLIFTS

### SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator: \_\_\_\_\_

Date: \_\_\_\_\_



## ***EXCAVATION PLANNING CHECKLIST***

This checklist shall only be used by AGVIQ-JV1 JOINT VENTURE II (JV II) when self-performing excavation activities and shall be completed by JV II excavation competent person during excavation activities. Personnel shall be permitted to enter excavations only after the JV II Excavation Entry Permit has been completed, authorized by the excavation competent person, and posted at the excavation entrance.

### **GENERAL INFORMATION**

Project/Site Name: \_\_\_\_\_ Project Number: \_\_\_\_\_  
Name/Location of Excavation: \_\_\_\_\_  
Scope of Work Description: \_\_\_\_\_  
Excavation Depth: \_\_\_\_\_ Excavation Width: \_\_\_\_\_

### **PRIOR TO EXCAVATING**

- ☐ Personnel meet training and medical surveillance requirements
- ☐ Dig permit obtained, where required by client/facility
- ☐ Client, installation owners, and utility companies contacted for exact location of underground utilities/installations
- ☐ Detection equipment used when exact location of underground utilities is unknown
- ☐ Soils to be excavated have been classified: ☐ Stable Rock ☐ Type A ☐ Type B ☐ Type C
- ☐ Combination, describe: \_\_\_\_\_

**NOTE: If soils unclassified, assume to be Type C**

- ☐ Groundwater table and stormwater run-off evaluated
- ☐ Area evaluated for existence of ordnance explosives (OE) and unexploded ordnance (UXO)

The Environmental Compliance Coordinator (ECC) should be consulted for the following requirements:

- ☐ Soils characterized where contamination may be present
- ☐ USDA (or local equivalent) soil permit obtained for soil transport
- ☐ Excavation evaluated for wetlands, endangered species, cultural/historic resources
- ☐ ACOE/CWA 404 (or local equivalent) permit obtained for wetland areas
- ☐ Stockpile management plan prepared to address national, state, and local regulations
- ☐ Waste discharge/NPDES (or local equivalent) permit obtained for excavation dewatering
- ☐ Storm Water Pollution Prevention or Erosion & Sediment Control Plan prepared, where required

### **GENERAL REQUIREMENTS**

- ☐ Daily safety briefing/meeting conducted with excavation personnel
- ☐ Guardrails provided on walkways over excavation 6' (1.5 m in Australia) or deeper
- ☐ Barriers provided at excavations 6' (1.5 m in Australia) or deeper when not readily visible
- ☐ Barriers/covers provided for wells, pits, shafts, or similar excavation 6' (1.5 m in Australia) or deeper
- ☐ Earthmoving equipment operated safely (use earthmoving equipment checklist in HS-27)
- ☐ Personnel provided with and wearing appropriate PPE



## EXCAVATING ACTIVITIES

- ☐ Rocks, trees, and other unstable surface objects removed or supported
- ☐ Exposed underground utility lines supported
- ☐ Undermined surface structures supported or determined to be in safe condition
- ☐ Warning system used to remind equipment operators of excavation edge
- ☐ Stockpile covers/liners and excavation silt fences/covers provided, where required (consult ECC)
- ☐ Fugitive dust suppressed

## PROTECTIVE SYSTEMS USE

- ☐ Protective systems used for excavations 5' (1.5 m) or deeper, unless stable rock
- ☐ Protective systems for excavation deeper than 20' (6.1 m) designed by registered PE
- ☐ Protective systems used: ☐ Sloping ☐ Shoring ☐ Trench Box ☐ Combination  
Describe: \_\_\_\_\_
- ☐ Sloping cut to appropriate angle of incline for soil classification (if unclassified, assume Type C soil)
- ☐ Shoring/trench boxes used according to manufacturer recommendations and not subjected to loads exceeding design limits
- ☐ Protective system components securely connected to prevent movement or failure
- ☐ Protective systems inspected daily and free from damage
- ☐ Defective protective systems replaced or corrected
- ☐ Personnel removed from shielding systems when installed, removed, or during vertical movement

## PROTECTIVE SYSTEM REMOVAL and BACKFILLING

- ☐ Protective system removal starts and progresses from excavation bottom
- ☐ Protective systems removed slowly and cautiously
- ☐ Temporary structure supports used if failure of remaining components observed
- ☐ Backfilling taking place immediately after protective system removal
- ☐ Backfill certified clean when required by client or local regulation (consult ECC)

## EXCAVATING AT HAZARDOUS WASTE SITES

- ☐ Waste disposed of according to Health & Safety Plan and RCRA regulations
- ☐ Appropriate decontamination procedures being followed, per Health & Safety Plan

## EXCAVATING AT ORDNANCE EXPLOSIVES SITES

- ☐ OE plan prepared and approved by JV1 UXO Safety Officer
- ☐ OE/UXO avoidance provided, access routes cleared, and boundaries marked prior to excavation
- ☐ Personnel remain inside marked boundary
- ☐ Earthmoving equipment does not excavate closer than 1' (30.5 cm) to anomalies

JV1 Excavation Competent Person Name: \_\_\_\_\_

JV1 Excavation Competent Person Signature: \_\_\_\_\_

Date Completed: \_\_\_\_/\_\_\_\_/\_\_\_\_



## H&S Self-Assessment Checklist - EARTHMOVING EQUIPMENT

This checklist shall be used by AGVIQ-CH2MHILL Joint Venture II (JVII) personnel **only** and shall be completed at the frequency specified in the project's HSP.

This checklist is to be used at locations where: 1) JVII employees are potentially exposed to hazards associated with earthmoving equipment operations (complete Sections 1 and 3), and/or 2) JVII oversight of a earthmoving equipment subcontractor is required (complete entire checklist).

HSO or designate may consult with earthmoving equipment subcontractors when completing this checklist, but shall not direct the means and methods of equipment operations nor direct the details of corrective actions. Earthmoving equipment subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Location: \_\_\_\_\_ PM: \_\_\_\_\_

Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JVII employee exposures to earthmoving equipment hazards  
☐ Evaluate a JVII subcontractor's compliance with earthmoving equipment H&S requirements  
Subcontractors Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the earthmoving equipment subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-27.

<u><b>SECTION 1</b></u>		<u><b>Yes</b></u>	<u><b>No</b></u>	<u><b>N/A</b></u>	<u><b>N/O</b></u>
<b>PERSONNEL SAFE WORK PRACTICES (3.1)</b>					
1.	Only authorized personnel operating earthmoving equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Personnel maintaining safe distance from operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Personnel and equipment operator in close communication when personnel must be in proximity of operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Personnel approach operating equipment safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Personnel wearing high-visibility and/or reflective vests when close to operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Personnel riding only in seats of equipment cab and using seat belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Personnel not positioned under hoisted loads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Personnel not hoisted by equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Personnel instructed not to approach equipment that has become electrically energized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Personnel wearing appropriate PPE, per HSP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## H&S Self-Assessment Checklist - EARTHMOVING EQUIPMENT

	<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
<b>GENERAL (3.2.1)</b>					
11. Daily safety briefing/meeting conducted with crew		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Daily inspection of equipment and equipment accessories conducted before use		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. At least one fire extinguisher available at the equipment operating area		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EARTHMOVING EQUIPMENT COMPONENTS (3.2.2)</b>					
14. Backup alarm or spotter used when backing equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Operational horn provided on bi-directional equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Seat belts are provided and used		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Rollover protective structures (ROPS) provided		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Braking system capable of stopping full payload		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Headlights and taillights operable when additional light required		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Brake lights in operable condition		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Cab glass provides no visible distortion to the operator		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Hauling equipment (dump trucks) provided with cab shield or canopy		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Dump truck beds provided with positive means of support during maintenance or inspection		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Dump truck operating levers provided with latch to prevent accidental dumping		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EARTHMOVING EQUIPMENT PLACEMENT (3.2.3)</b>					
25. Location of underground utilities identified		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Safe clearance distance maintained while working under overhead powerlines		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Safe distance is maintained while traveling under powerlines		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Unattended equipment visibly marked at night		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Parking brake set when equipment parked and equipment chocked when parked on incline		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EARTHMOVING EQUIPMENT OPERATION (3.2.4)</b>					
30. Equipment operated on safe roadways and grades		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Equipment operated at safe speed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Equipment not operated during inclement weather, lightning storms		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Using equipment to lift loads, other than earth, done according to equipment manufacturer specifications		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Lifting and hauling capacities are not exceeded		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Equipment components lowered when not in use		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. All machine guards are in place		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Air monitoring conducted per HSP/FSI for hazardous atmospheres		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EARTHMOVING EQUIPMENT MAINTENANCE (3.2.5)</b>					
38. Defective components repaired immediately		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Suspended equipment or equipment parts are supported prior to work under or between		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Lockout/tagout procedures used prior to maintenance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Tires on split rims removed using safety tire rack or cage		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Good housekeeping maintained on and around equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EXCAVATING AT HAZARDOUS WASTE SITES (3.2.6)</b>					
43. Waste disposed of according to HSP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Appropriate decontamination procedures being followed, per HSP		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## H&S Self-Assessment Checklist - EARTHMOVING EQUIPMENT

### **SECTION 3**

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator \_\_\_\_\_ Date \_\_\_\_\_



## H&S Self-Assessment Checklist - FORKLIFTS

Page 1 of 3

This checklist shall be used by AGVIQ-CH2M HILL Joint Venture I (JV II) personnel **only** and shall be completed at the frequency specified in the project's HSP.

This checklist is to be used at locations where: 1) JV II employees are potentially exposed to hazards associated with forklift operations (complete Sections 1 and 3), and/or 2) JV II oversight of a subcontractor using forklifts is required (complete entire checklist).

The Safety Coordinator (SC) may consult with subcontractors using forklifts when completing this checklist, but shall not direct the means and methods of forklift operations nor direct the details of corrective actions. Subcontractors using forklifts shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the health and safety manager for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Location: \_\_\_\_\_ PM: \_\_\_\_\_

Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JV II employee exposures to forklift hazards.  
☐ Evaluate a JV II subcontractor's compliance with forklift H&S requirements.  
Subcontractor's Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-48.

### SECTION 1

Yes   No   N/A   N/O

#### **PERSONNEL SAFE WORK PRACTICES (3.1)**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Personnel maintaining safe distance from operating forklifts.                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Positioning personnel in proximity to operating forklifts is avoided.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Personnel wearing high-visibility vests when close to operating forklifts.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Personnel approach operating forklifts safely.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Personnel only riding in seats equipped with seat belts.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Personnel not lifted or lowered by forklift unless approved for such use.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Personnel not positioned under elevated loads or forks.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Personnel avoid placing body between mast uprights or outside running lines during operation. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Personnel instructed not to approach forklift that has become electrically energized.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



	<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
<b>GENERAL (3.2.1)</b>					
10. Only certified personnel operating forklifts.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Daily safety briefing/meeting conducted with forklift operators.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Daily inspection of forklift and forklift accessories conducted before use.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Rated capacity of forklift visible to operator.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Modifications and attachments used approved by forklift manufacturer.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. High-lift forklifts have load backrest and overhead guard.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Seat belts are provided and used.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Backup alarm or spotter used when backing forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Operational horn provided and used as necessary.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Braking system capable of stopping capacity load.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Forklifts equipped with lights for low-light operations.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Carbon monoxide concentrations below PEL (50ppm).		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. At least one fire extinguisher available at the forklift operating area.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>DESIGNATIONS AND LOCATIONS (3.2.2)</b>					
23. Atmosphere/locations classified as hazardous or non-hazardous.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Only properly designated forklifts used in hazardous locations.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>FORKLIFT OPERATION (3.2.3)</b>					
25. Forklift operated on safe roadways and grades.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Grades ascended/descended properly.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Forklift operated at safe speed, kept under control at all times		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Operators slow down and use horn at areas with obstructed vision.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Forklifts operating in reverse when load obstructs vision.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Operator keeping clear view of path of travel.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Forklifts do not pass other stopped vehicles at areas with obstructed vision.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Operators maintain safe distance from edge or ramps and platforms.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Overhead clearance maintained from installations.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Forklifts not parked within 8 feet of center of railroad tracks. Tracks crossed diagonally.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Forklift parked correctly when operator is dismounted.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Personnel platforms secured to forklift and shut off means provided on platform.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Trucks, trailers, railroad cars secured from movement before entering with forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Dockplates/bridgeplates secured before use; capacity not exceeded.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Truck, trailer, railroad car flooring checked for weakness before forklift boarding.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Operator handles only loads within rated capacity, adjusts for long or tall loads.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Loads are stabilized before forklift travel.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Operator using proper tilt to stabilize load, uses caution when tilting elevated loads.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. When two forklifts lift a load in unison, operators stay in close communication.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>FORKLIFT MAINTENANCE (3.2.4)</b>					
44. Forklifts with unsafe conditions removed from service and tagged as such to prevent use.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Forklifts repaired in designated, non-hazardous locations by authorized personnel.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Battery disconnected when repairing electrical systems.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Additions or omissions of parts not performed without manufacturer's approval.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Good housekeeping maintained on and around forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Water mufflers checked daily, kept at 75% full.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Forklifts removed from service if sparks, flames, or elevated operating temperatures occur.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Suspended forklifts or forklift parts are supported prior to work under or between.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. Forklifts properly parked before fueling/battery charging.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Fueling/battery charging conducted in designated, well-ventilated area.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Fueling/battery charging areas properly equipped for task.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. No smoking in fueling/battery charging areas.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. Spillage of fuel properly cleaned up before starting forklift.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. Forklifts with fuel leaks taken out of service.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



### SECTION 3

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator \_\_\_\_\_ Date \_\_\_\_\_



## H&S Self-Assessment Checklist – HAND AND POWER TOOLS

This checklist shall be used by AGVIQ-CH2MHILL JOINT VENTURE 1 (JV II) personnel **only** and shall be completed at the frequency specified in the project's HSP.

This checklist is to be used at locations where: 1) JV II employees are exposed to hand and power tool hazards and/or 2) JV II provides oversight of subcontractor personnel who are exposed to hand and power tool hazards.

The Safety Coordinator (SC) may consult with subcontractors when completing this checklist, but shall not direct the means and methods of hand and power tool use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_  
Location: \_\_\_\_\_ PM: \_\_\_\_\_  
Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JV II employee exposure to hand and power tool hazards.  
☐ Evaluate a JV II subcontractor's compliance with hand and power tool requirements.

Subcontractors Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-50.

### SECTION 1

**Yes   No   N/A   N/O**

#### **SAFE WORK PRACTICES (3.1)**

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. All tools operated according to manufacturer's instructions and design limitations.                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. All hand and power tools maintained in a safe condition and inspected and tested before use.       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Defective tools are tagged and removed from service until repaired.                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. PPE is selected and used according to tool-specific hazards anticipated.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Power tools are not carried or lowered by their cord or hose.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Tools are disconnected from energy sources when not in use, servicing, cleaning, etc.              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Safety guards remain installed or are promptly replaced after repair.                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Tools are stored properly.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Cordless tools and recharging units both conform to electrical standards and specifications.       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Tools used in explosive environments are rated for such use.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Knife or blade hand tools are used with the proper precautions.                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stressors. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



## H&S Self-Assessment Checklist – HAND AND POWER TOOLS

### SECTION 2

Yes No N/A N/O

#### **GENERAL (3.2.1)**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 13. PPE is selected and used according to tool-specific hazards anticipated.           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Tools are tested daily to assure safety devices are operating properly.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Damaged tools are removed from service until repaired.                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Power operated tools designed to accommodate guards have guards installed.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. Rotating or moving parts on tools are properly guarded.                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Machines designed for fixed locations are secured or anchored.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. Floor and bench-mounted grinders are provided with properly positioned work rests. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. Guards are provided at point of operation, nip points, rotating parts, etc.        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. Fluid used in hydraulic-powered tools is approved fire-resistant fluid.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### **ELECTRIC-POWERED TOOLS (3.2.2)**

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 22. Electric tools are approved double insulated or grounded and used according to SOP HS-23.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. Electric cords are not used for hoisting or lowering tools.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. Electric tools are used in damp/ wet locations are approved for such locations or GFCI installed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 25. Hand-held tools are equipped with appropriate on/off controls appropriate for the tool.           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. Portable, power-driven circular saws are equipped with proper guards.                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### **ABRASIVE WHEEL TOOLS (3.2.3)**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 27. All employees using abrasive wheel tools are wearing eye protection.                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. All grinding machines are supplied with sufficient power to maintain spindle speed.    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. Abrasive wheels are closely inspected and ring-tested before use.                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 30. Grinding wheels are properly installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 31. Cup-type wheels for external grinding are protected by the proper guard or flanges.    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 32. Portable abrasive wheels used for internal grinding are protected by safety flanges.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 33. Safety flanges are used only with wheels designed to fit the flanges.                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 34. Safety guards on abrasive wheel tools are mounted properly and of sufficient strength. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

#### **PNEUMATIC-POWERED TOOLS (3.2.4)**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 35. Tools are secured to hoses or whip by positive means to prevent disconnection.                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 36. Safety clips or retainers are installed to prevent attachments being expelled.                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Safety devices are installed on automatic fastener feed tools as required.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 38. Compressed air is not used for cleaning unless reduced to < 30 psi, with PPE, and guarded.       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 39. Manufacturer's safe operating pressure for hoses, pipes, valves, etc. are not exceeded.          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 40. Hoses are not used for hoisting or lowering tools.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 41. All hoses >1/2-inch diameter have safety device at source to reduce pressure upon hose failure.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 42. Airless spray guns have required safety devices installed.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 43. Blast cleaning nozzles are equipped with operating valves, which are held open manually.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 44. Supports are provided for mounting nozzles when not in use.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 45. Air receiver drains, handholes, and manholes are easily accessible.                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 46. Air receivers are equipped with drainpipes and valves for removal of accumulated oil and water.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 47. Air receivers are completely drained at required intervals.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 48. Air receivers are equipped with indicating pressure gauges.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 49. Safety, indicating, and controlling devices are installed as required.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 50. Safety valves are tested frequently and at regular intervals to assure good operating condition. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



## **SECTION 2 (continued)**

**Yes   No   N/A   N/O**

### **LIQUID FUEL-POWERED TOOLS (3.2.5)**

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 51. Liquid fuel-powered tools are stopped when refueling, servicing, or maintaining.                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 52. Liquid fuels are stored, handled, and transported in accordance with SOP HS-21                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 53. Liquid fuel-powered tools are used in confined spaces in accordance with SOP HS-17.             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 54. Safe operating pressures of hoses, valves, pipes, filters, and other fittings are not exceeded. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### **POWDER-ACTUATED TOOLS (3.2.6)**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 55. Only trained employee operates powder-actuated tools.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 56. Powder-actuated tools are not loaded until just prior to intended firing time.                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 57. Tools are not pointed at any employee at any time.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 58. Hands are kept clear of open barrel end.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 59. Loaded tools are not left unattended.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 60. Fasteners are not driven into very hard or brittle materials.                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 61. Fasteners are not driven into easily penetrated materials unless suitable backing is provided. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 62. Fasteners are not driven into spalled areas.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 63. Powder-actuated tools are not used in an explosive or flammable atmosphere.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 64. All tools are used with correct shields, guards, or attachments recommended by manufacturer.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### **JACKING TOOLS (3.2.7)**

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 65. Rated capacities are legibly marked on jacks and not exceeded.                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 66. Jacks have a positive stop to prevent over-travel.                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 67. The base of jacks are blocked or cribbed to provide a firm foundation, when required. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 68. Wood blocks are placed between the cap and load to prevent slippage, when required.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 69. After load is raised, it is cribbed, blocked, or otherwise secured immediately.       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 70. Antifreeze is used when hydraulic jacks are exposed to freezing temperatures.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 71. All jacks are properly lubricated.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 72. Jacks are inspected as required.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 73. Repair or replacement parts are examined for possible defects.                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 74. Jacks not working properly are removed from service and repaired or replaced.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### **HAND TOOLS (3.2.8)**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 75. Wrenches are not used when jaws are sprung to the point of slippage.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 76. Impact tools are kept free of mushroomed heads.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 77. Wooden handles of tools are kept free of splinters or cracks and are tightly fitted in tool. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



## H&S Self-Assessment Checklist – HAND AND POWER TOOLS

### SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator \_\_\_\_\_ Date \_\_\_\_\_



## H&S Self-Assessment Checklist - STAIRWAYS AND LADDERS

Page 1 of 3

This checklist shall be used by AGVIQ-CH2M HILL Joint Venture II (JV II) personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) JV II employees are using stairways and ladders and/or 2) JV II provides oversight of subcontractor personnel who are using stairways and ladders.

The Safety Coordinator (SC) may consult with subcontractors when completing this checklist, but shall not direct the means and methods of stairway and ladder use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Location: \_\_\_\_\_ PM: \_\_\_\_\_

Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JV II employee use of stairways and ladders
- ☐ Evaluate a JV II subcontractor's compliance with stairway and ladder requirements

Subcontractors Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-25.

### SECTION 1

#### **PERSONNEL SAFE WORK PRACTICES (3.1)**

	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
1. JV II employees have completed stairway and ladder training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Carrying objects on stairs with both hands is avoided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Pan and skeleton metal stairs not used until permanent or temporary treads/landings provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Ladders periodically inspected for defects by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Defective ladders tagged and removed from service until repaired	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Ladders used only for purpose for which they were designed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Ladders not loaded beyond their rated capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Only one person simultaneously climbing or working from an individual ladder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Personnel face ladder when climbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Personnel climbing ladders maintain 3 points of contact with ladder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Personnel not carrying tools, materials, or equipment while climbing. Tag lines used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Ladders not moved, shifted or extended while in use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Stepladders used in open and locked position only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Stepladders top and top step not used as a step	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Stepladders cross-bracing not used for climbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Fall protection considered when working from ladders over 6'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



# H&S Self-Assessment Checklist - STAIRWAYS AND LADDERS

Page 2 of 3

## SECTION 2

Yes No N/A N/O

### STAIRWAYS AND LADDERS: GENERAL (3.2.1)

17. Stairways or ladders provided at breaks in elevation  $\geq 19$  inches  
18. At least one clear access point provided to elevated levels

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### STAIRWAY: DESIGN AND CONSTRUCTION (3.2.2)

19. Stairways maintained free of slippery conditions and dangerous projections  
20. Stairways installed between 30 - 50 degrees with uniform risers and treads  
21. Landings (30" deep x 22" wide) provided every 12' of vertical rise.  
22. Landings extend  $\geq 20$ " beyond swing of any doors  
23. Adequate stair rails installed at each unprotected side or edge  
24. Handrails installed as handhold for support  
25. Mid-rails, screens, mesh, or intermediate members installed between top rail and treads  
26. Adequate guardrails installed at each unprotected side or edge of a landing

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### LADDERS: GENERAL (3.2.3)

27. Ladder components surfaced to prevent injury from puncture, laceration, or snagging clothing  
28. Ladders maintained free of oil, grease, and other slipping hazards  
29. The area around the top and bottom of ladders kept free of obstructions

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### PORTABLE LADDERS: DESIGN AND CONSTRUCTION (3.2.4)

30. Only ANSI approved portable ladders used  
31. Rungs and steps are parallel, level, and uniformly spaced  
32. Ladders not tied or fastened together to create longer sections unless designed for such use  
33. Ladders with non-conductive side rails used near energized electrical equipment  
34. Extension ladders equipped with positive section stops  
35. Stepladders provided with metal spreader or locking device to hold open when in use  
36. Wood ladders not coated with opaque covering  
37. Double-cleated or two ladders provided if  $> 25$  personnel use ladders as only means of access, or when ladder serves simultaneous two-way traffic  
38. Two or more ladders used to reach elevated work areas offset with platform or landing

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### PORTABLE LADDER: POSITIONING (3.2.5)

39. Ladders used only on stable, level, surfaces unless secured to prevent movement  
40. Ladders placed in areas where they can be displaced by work activities, secured or barricaded  
41. Extension ladder section overlap adequate distance  
42. Extension and straight ladders placed with both side rails supported equally  
43. Extension and straight ladders positioned at approximately 75 degree angle  
44. Ladders extend 3' above upper landings or are secured at top

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### FIXED LADDERS: DESIGN AND CONSTRUCTION (3.2.6)

45. Adequate clearances from obstructions maintained behind, in front, and to side of ladder rungs  
Ladder step across distance at access point 7-12"  
47. Side rails extend 42" above landing platform  
48. Cages, wells, ladder safety devices, or self-retracting lifelines used for ladders  $> 24'$   
49. Ladder safety devices operate without the use of hands  
50. Ladder safety devices activate within 2' after a fall  
51. Connection between lifeline and harness attachment point  $\leq 9"$

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

46.



## H&S Self-Assessment Checklist - STAIRWAYS AND LADDERS

Page 3 of 3

### SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator: \_\_\_\_\_ Date: \_\_\_\_\_



## HS&E Self-Assessment Checklist—Waste Characterization, Sampling and Analysis

This checklist shall be used by AGVIQ-JV II Joint Venture I (JV II) personnel **only** and shall be completed at the frequency specified in the project's Work Plan.

This checklist is to be used at locations where: 1) JV II employees will be managing wastes generated on project sites and/or 2) JV II provides oversight of subcontractor personnel who are managing wastes generated at project sites.

The Safety Coordinator (SC) may consult with subcontractors when completing this checklist, but shall not direct the means and methods of waste characterization, sampling and analysis operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Completed checklists shall be sent to the HS&E Staff for review.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_  
Location: \_\_\_\_\_ PM: \_\_\_\_\_  
Person filling out checklist: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate JV II compliance with its waste characterization, sampling and analysis standard (SOP-79).  
☐ Evaluate a JV II subcontractor's compliance with the waste characterization, sampling and analysis standard and its requirements  
Subcontractors Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HS-42.

	Yes	No	N/A	N/O
<b>GENERAL WASTE CHARACTERIZATION INFORMATION (6.0)</b>				
1. Personnel told not to sign waste documentation (e.g., manifests) unless specifically authorized by the client in writing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Waste Management Plan developed and available to all project personnel (see HSE-78).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Waste characterized before it is generated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Waste characterized by Client using generator information.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Waste volumes estimated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Disposal facility sampling and analytical requirements identified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Disposal facility evaluated (see HSE-78).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Waste stream characterization documented in project file.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>IDENTIFY ANALYTICAL TEST METHODS (7.1)</b>				
9. Nature and quantity of the waste determined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Analyses required for transport, treatment, and disposal determined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Detection limits identified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Provide disposal facility with analytical results.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Analytical test methods identified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



<b>SAMPLING (7.2)</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
14. Developed a sampling plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Field activities recorded in a logbook.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Exceptions to sampling plan documented in field logbook.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Each container labeled with the project name, number, sample ID number, date and time,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. The label on the container is covered with clear tape to prevent loss. collected sampler's name, sample preserves, analysis to be performed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>CHAIN OF CUSTODY (COC)</b>				
19. Sample shipping containers sealed with two custody seals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Custody seals placed over the left and rights sides of the container's cover (cooler).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Each seal signed and dated (with time).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Seals are covered with clear tape to prevent loss.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Custody seals placed on sample container immediately after collection.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Custody seals must be placed in a manner that they must be broken to open sample container.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. The sample is in custody ( in view or physical possession, it has not been tampered with, it is retained in a secured area with restricted access, it is placed in a container and secured with an official seal such that it cannot be reached without breaking the seal).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>CHAIN OF CUSTODY FORM INSTRUCTIONS (7.2.5)</b>				
26. Chain of Custody form completed per instructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>RECORDS (7.2.6)</b>				
27. Original COC submitted to the lab along with final data packages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Official copy of COC form sent to the project chemist and lab with sample shipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Changes to analytical requests on COC form or the PO made in writing to the lab.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. A copy of written change sent to PM, lab, and placed in project files.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Reasons for change are included in sample log and project file.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Sample logbooks, sample logs, and COC forms sent to PM at completion of project activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## H&S Self-Assessment Checklist—Waste Characterization, Sampling and Analysis

Complete this section for all items checked “No” in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Safety Coordinator \_\_\_\_\_ Date \_\_\_\_\_



## **Attachment 5**

### **Drug Free Work Place Program**



# Drug-Free Workplace

JV II does not tolerate illegal drugs, or any use of drugs, controlled substances, or alcohol that impairs an employees work performance or behavior. JV II has established a policy that its employees and subcontractors will not be involved in any manner with the unlawful manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace. The use or possession of alcohol in the workplace is also prohibited. Any violation of these prohibitions may result in discipline or immediate discharge. Please reference SOP 105, *Drug-Free Workplace Standard of Practice*, for more information. The following sections describe mandatory program requirements.

## Policy Statement

A policy statement is required for the Drug-Free Workplace Program. The policy statement should detail prohibited conduct and ramifications, and:

Prohibit drug, alcohol, and/or controlled substances use or abuse

Prohibit involvement in the manufacture, distribution, dispensation, possession, sale, or use of illegal drugs in the workplace

Describe disciplinary actions

Stipulate that subcontractor will pay for all testing

## Subcontractor Management

All lower-tiered subcontractors must comply with the provisions of this program.

If a subcontractor's employee has a confirmed positive test result, the subcontractor is required to notify JV II of test result within 24 hours and provide written documentation that the employee has been removed from the site.

Employees testing positive will be removed from the JV II project and not allowed to return for a minimum of six months, and then only upon providing a negative drug screen result.

Subcontractor is responsible for maintaining their own records. JV II requires that the subcontractor submit the names of their employees who have confirmed negative test results on company letterhead, certifying that the employees have met the Drug-Free Workplace Program requirements. JV II reserves the right to audit the subcontractor's program and records at any time.

Site visitors are not required to be drug tested but must be escorted by someone who has been tested. Site visitors are employees who visit a site for a day or less and who are accompanied by a site manager/supervisor. Site visitors are employees who observe the project and are not exposed to significant HS&E hazards. The SC-C must be involved in determining whether an employee is considered a site visitor.

## Drug and Alcohol Testing

Testing will be conducted for all substances listed below. If the results exceed the level list, a confirmation sample will be conducted with a gas chromatography/mass spectrometry (GC/MS). If the GC/MS levels exceed those listed, the results will be reported to the Medical Review Officer (MRO).



**TABLE 7-1**  
**Drug Levels**

Substance	Screening Threshold Level	Confirmation Threshold Level
	(EMIT)	(GC/MS)
Amphetamines	1000 ng/ml	500 ng/ml
Cocaine Metabolite	300 ng/ml	150 ng/ml
Opiates	2000 ng/ml	2000 ng/ml
Phencyclidine (PCP)	25 ng/ml	25 ng/ml
Marijuana	50 ng/ml	15 ng/ml
Alcohol, Ethyl	0.02 gm/dl	0.04 gm/dl

Alcohol testing will be performed in accordance with the FMCSA Alcohol & Drug Testing Regulations using breath alcohol testing equipment and procedures. Two alcohol tests are required to determine if a person has a prohibited alcohol concentration. A screening test is conducted first, with any result less than 0.02 gm/dl considered a “negative” result. If the alcohol concentration is greater than 0.02 gm/dl, a second confirmation test must be conducted. Confirmation breath alcohol tests greater than 0.04 gm/dl are considered a “positive” result.

Only a Breath Alcohol Technician (BAT) may be used for breath alcohol testing, unless applicable state licensing or other requirements mandate blood tests or unless testing facilities are not available for breath sampling. When blood alcohol testing is used, each presumptive positive result must be confirmed by a second analysis using a GC/MS.

## **Prescription and Non-Prescription Drugs**

Employees using prescription or non-prescription drugs that could impair their functions on the project are required to notify the employer in advance of such drug use.

Failure to report prescription and non-prescription drugs as required above, illegally obtaining the substance, or use that is inconsistent with the prescription or label may be subject to disciplinary action.

## **Types of Testing**

### **General Requirements**

Pre-hire, pre-assignment and random testing will only entail drug testing, while all other types of testing must include drug and alcohol testing.

Employees who refuse to submit to drug or alcohol testing will be treated as if they tested positive and will be disciplined accordingly.

Prior to drug or alcohol testing, the employee must sign a consent form. Copies of this form must be maintained on file by the subcontractor.

A candidate will be eliminated from employment consideration for tampering with, altering, or attempting to create a false negative result.

### **Pre-Hire, Pre-Assignment Testing**

Employees working on the Project are required to submit to a pre-assignment test for drugs. The test must be taken within 30 days of the employee’s arrival date at the project.



Subcontractor is responsible for maintaining their own records. JV II requires that the subcontractor submit the names of their employees who have confirmed negative test results on company letterhead, certifying that the employees have met the Drug-Free Workplace Program requirements. JV II reserves the right to audit the subcontractor's program and records at any time.

A positive test for a potential new hire or existing employee will result in eliminating the person for consideration for assignment to the project.

Applicants and existing employees who do not successfully pass the drug test may be reconsidered for assignment to the project after 6 months.

## **Random Testing**

JV II reserves the right to randomly tests program participants.

## **Post-Incident Testing**

At a minimum, post-incident testing is required following an incident on the project that results in an injury in the course of employment requiring treatment from a doctor, or following an incident that results in property damage over US \$1,000.

Post-incident testing may be required under other circumstances as dictated by the CM, PM, HSM, HSO, or MEC Support Officer.

Post-incident testing will include both drug and alcohol testing.

## **Cause or Reasonable Suspicion Testing**

When the company or JV II believe there is cause for reasonable suspicion that an employee has taken drugs or consumed alcohol while at work or returned to duty with drugs or alcohol in their body, the employee will be required to immediately submit to drug and/or alcohol tests.

Management must approve "for cause" or "reasonable suspicion" testing prior to requiring an employee to submit to the test.

The subcontractor must maintain written documentation that supports the need for reasonable suspicion testing.

Employees who are required to submit to reasonable suspicion testing will be entitled to request the presence of a Union steward, provided a Union steward is readily available (within one hour or less) and the circumstances allow. The employee's employer will be responsible for contacting the craft steward.

Employees who are required to submit to reasonable suspicion testing must submit to the test immediately after the determination has been made. Employees are prohibited from transporting themselves to the collection site.

For cause testing will include both drug and alcohol testing.

## **Rehabilitation Follow-Up Testing**

If an employee enters a rehabilitation program, they will be subject to periodic testing for a period of up to 2 years upon their return to work.

The company will follow the MRO-recommended frequency for all follow-up testing.

## **Re-testing**

A dilute sample will be immediately re-tested. The employee's supervisor must escort the employee to the collection site for re-sampling.

The employee must be required to submit to the escorted test without prior warning.



A refusal to retest under these conditions will be considered a positive result and will be disciplined accordingly.

## **Notification of Results**

Positive test results must be reported to JV II within 24 hours of notification from laboratory.

Employee's drug screen result must be kept confidential. Only company individuals with a work-related need to know will be given the results.

## **Searches and Inspections**

The subcontractor and JV II must be able to conduct searches of project locations (vehicles, lockers, desks, filing cabinets, or equipment owned or being operated by subcontractor personnel) and employee's personal property (briefcases, purses, backpacks, coats, or vehicles). Employees and their property will be searched by local law enforcement.

JV II must be notified prior to conducting a search.

Employees must sign a search consent and documentation form prior to having a search conducted of the employee's personal property. The subcontractor is responsible for maintaining this form which will also document findings of the search.

The employee will be entitled to request the presence of a Union steward, provided a Union steward is readily available (1 hour or less) and the circumstances allow.

A refusal to submit to, or cooperate with a search, will result in immediate removal from the project site.

## **Disciplinary Actions**

Employees who test positive for drugs or alcohol will be immediately removed from the project.

The company will determine appropriate action, including the level of discipline which includes actions ranging from providing an opportunity for entry into a rehabilitation or counseling program to suspension or dismissal.

## **Drug Program Service Provider**

Positive and/or inconclusive drug screen results must be reviewed by a licensed MRO.

The laboratory providing drug screen analysis must meet all federal, state, and local licensing requirements to provide drug screen analysis.

## **Employee Education**



Employees and supervisors must be provided with a Drug-Free Workplace Program and an Alcohol Education Awareness Program.



## Attachment 6

Material Safety Data Sheets  
(provided onsite)



		CDC Home	CDC Search	CDC Health Topics A-Z
		National Institute for Occupational Safety and Health		
<a href="#">Search NIOSH</a>		<a href="#">NIOSH Home</a>	<a href="#">NIOSH Topics</a>	<a href="#">Site Index</a>
<a href="#">Databases and Information Resources</a>		<a href="#">NIOSH Products</a>		
NIOSH Publication No. 2005-151:				
NIOSH Pocket Guide to Chemical Hazards				
<a href="#">NPG Home</a>		<a href="#">Introduction</a>	<a href="#">Synonyms &amp; Trade Names</a>	<a href="#">Chemical Names</a>
<a href="#">CAS Numbers</a>		<a href="#">RTECS Numbers</a>	<a href="#">Appendices</a>	<a href="#">Se</a>
Hydrogen sulfide		CAS 7783-06-4		
H <sub>2</sub> S		RTECS MX122		
Synonyms & Trade Names		DOT ID & Gu		
Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen		1053 117		
Exposure Limits		NIOSH REL: C 10 ppm (15 mg/m <sup>3</sup> ) [10-minute]		
		OSHA PEL†: C 20 ppm 50 ppm [10-minute maximum peak]		
IDLH 100 ppm See: 7783064		Conversion 1 ppm = 1.40 mg/m <sup>3</sup>		
Physical Description				
Colorless gas with a strong odor of rotten eggs. [Note: Sense of smell becomes rapidly fatigued & can NOT be relied upon continuous presence of H <sub>2</sub> S. Shipped as a liquefied compressed gas.]				
MW: 34.1		BP: -77°F	FRZ: -122°F	Sol: 0.4%
VP: 17.6 atm		IP: 10.46 eV	RGasD: 1.19	
Fl.P: NA (Gas)		UEL: 44.0%	LEL: 4.0%	
Flammable Gas				
Incompatibilities & Reactivities				
Strong oxidizers, strong nitric acid, metals				
Measurement Methods				
NIOSH 6013; OSHA ID141				
See: NMAM or OSHA Methods				
Personal Protection & Sanitation (See protection)			First Aid (See procedures)	
Skin: Frostbite			Eye: Frostbite	
Eyes: Frostbite			Skin: Frostbite	
Wash skin: No recommendation			Breathing: Respiratory support	
Remove: When wet (flammable)				
Change: No recommendation				
Provide: Frostbite wash				
Respirator Recommendations NIOSH				
Up to 100 ppm:				
(APF = 25) Any powered, air-purifying respirator with cartridge(s) providing protection against the compound of concern				
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister provid				
against the compound of concern				
(APF = 10) Any supplied-air respirator*				
(APF = 50) Any self-contained breathing apparatus with a full facepiece				
Emergency or planned entry into unknown concentrations or IDLH conditions:				
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand o				
pressure mode				
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positi				
mode in combination with an auxiliary self-contained positive-pressure breathing apparatus				
Escape:				



(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister provided against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus

**Important additional information about respirator selection**

**Exposure Routes** inhalation, skin and/or eye contact

**Symptoms** Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite

**Target Organs** Eyes, respiratory system, central nervous system

**See also:** [INTRODUCTION](#) See ICSC CARD: [0165](#) See MEDICAL TESTS: [0119](#)

[NIOSH Home](#) | [NIOSH Search](#) | [Site Index](#) | [Topic List](#) | [Contact Us](#)

NIOSH



Spectrum  
Division of United Industries Corp.  
P.O. Box 142642  
St. Louis, MO 63114-0642

# Material Safety Data Sheet

Complies with OSHA's Hazard Communication Standard, 29 CFR 1910.1200

## Hazardous Material Identification System-(HMIS)

HEALTH - 2

REACTIVITY - 0

FLAMMABILITY - 3

PERSONAL - None

<b>I Trade Name:</b> Unscented Backwoods Cutter Insect Repellent			
<b>Product Type:</b> Insect Repellent Aerosol			
<b>Product Item Number:</b> 53655		<b>Formula Code Number:</b> 21-0394	
<b>EPA Registration Number</b>	<b>Manufacturer</b>		<b>Emergency Telephone No.</b>
121-68	Chemisco 8494 Chapin Industrial Dr. St. Louis, MO 63114		For Chemical Emergency: 1-800-633-2873 For Information: 1-800-332-5553 Prepared by: H.L. Pauls Date Prepared: October 18, 1994
<b>II Hazardous Ingredients/Identity Information</b>		<b>III Physical and Chemical Characteristics</b>	
Chemical	%	OSHA PEL	ACGIH TLV
N,N-diethyl-m-Toluamide (DEET) CAS #134-62-3	23	NA	NA
SDA-40 Ethanol CAS #64-17-5	35	NA	1000 ppm
Isobutane CAS #75-28-5	10	NE	NE
Appearance and Odor: Clear, colorless or pale yellow liquid with ethanolic odor.		Boiling Point: 75°C	
Vapor Pressure: 43mm @ 20°C		Specific Gravity: 0.88 @ 72°F (H <sub>2</sub> O=1)	
Vapor Density: 1.6		% Volatile (by vol.): 65	
Solubility in Water: Not known		Evaporation Rate: Approx. 1 (BuOAc=1)	
<b>IV Fire and Explosion Hazard Data</b>		<b>V Reactivity Data</b>	
Flash Point: 56°F (Closed Cup)		Stability: Stable	
Flame Extension: 18"		Polymerization: Will not occur	
Flammable Limits: Lower: 3.3% Upper: 19.0%		Conditions to Avoid: None	
Autoignition Temp.: 793°F		Incompatible Materials: May soften or damage some synthetics such as rayon. May damage leather.	
Fire Extinguishing Media: CO <sub>2</sub> , Foam, or Dry Chemical		Hazardous Decomposition or Byproducts: None	
Decomposition Temp.: N/A			
Special Fire-Fighting Procedures: For small fires: Use CO <sub>2</sub> or dry chemical extinguisher. For large fires: Use copious amounts of water.			
Unusual Fire and Explosion Hazards: See section VII			
<b>VI Health Hazard Data</b>		<b>VII Precautions for Safe Handling and Use</b>	
Ingestion (Swallowing): Harmful if swallowed. First Aid: Consult a physician or poison control. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.		Steps to be Taken in Case Material is Released or Spilled: Flammable material. Remove all possible ignition sources. Wipe up with absorbent material. Wash small quantities away with soapy water. Prevent bulk quantities from entering open sewers and waterways.	
Eye Contact: May cause eye irritation. First Aid: Flush with plenty of water. Get medical attention.		Waste Disposal: This material is flammable and must be disposed of in accordance with Local, State and Federal regulations. Do not puncture or incinerate empty container; dispose of properly.	
Skin Contact: If skin reaction occurs, wash with soap and water. Get medical attention if irritation persists.		Handling & Storage Precautions: Keep away from heat, sparks or open flame. Do not expose treated skin to fire sparks or flame until liquid has dried.	
Inhalation Toxicity: Avoid breathing spray mist or using in enclosed area.			
Special Notes: Apply only to skin or clothing, do not ingest. Keep out of eyes. Frequent reapplication or saturation is unnecessary.			
Health Conditions Aggravated by Exposure: None Known			
Ingredients listed by NTP, OSHA or IARC as Carcinogens or potential carcinogens: None			
<b>VIII Control Measures</b>		<b>IX Transportation Data</b>	
Read and follow label directions. They are your best guide to using this product effectively, and give necessary safety precautions to protect your health.		DOT Shipping Name - Consumer Commodity DOT Hazard Class - ORM-D Level 1 Aerosol	

The information and statements herein are believed to be reliable but are not to be construed as warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.



Spectrum  
Division of United Industries Corp.  
P.O. Box 142642  
St. Louis, MO 63114-0642

# Material Safety Data Sheet

Complies with OSHA's Hazard Communication Standard, 29 CFR 1910.1200

## Hazardous Material Identification System-(HMIS)

HEALTH - 1

REACTIVITY - 0

FLAMMABILITY - 3

PERSONAL - None

<b>I Trade Name:</b> Unscented Cutter Outdoorsman Insect Repellent																			
<b>Product Type:</b> Insect Repellent Aerosol																			
<b>Product Item Number:</b> 30010		<b>Formula Code Number:</b> 21-0376																	
<b>EPA Registration Number</b>	<b>Manufacturer</b>	<b>Emergency Telephone No.</b>																	
121-66	Chemsico 8494 Chapin Industrial Dr. St. Louis, MO 63114	<b>For Chemical Emergency:</b> 1-800-633-2873 <b>For Information:</b> 1-800-332-5553 <b>Prepared by:</b> H.L. Pauls <b>Date Prepared:</b> October 4, 1994																	
<b>II Hazardous Ingredients/Identity Information</b>		<b>III Physical and Chemical Characteristics</b>																	
<table border="1"> <thead> <tr> <th>Chemical</th> <th>%</th> <th>OSHA PEL</th> <th>ACGIH TLV</th> </tr> </thead> <tbody> <tr> <td>N,N-diethyl-m-Toluamide (DEET) CAS #134-62-3</td> <td>28.5</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>SDA-40 Ethanol CAS #64-17-5</td> <td>20</td> <td>NA</td> <td>1000 ppm</td> </tr> <tr> <td>Isobutane CAS #75-28-5</td> <td>10</td> <td>NE</td> <td>NE</td> </tr> </tbody> </table>	Chemical	%	OSHA PEL	ACGIH TLV	N,N-diethyl-m-Toluamide (DEET) CAS #134-62-3	28.5	NA	NA	SDA-40 Ethanol CAS #64-17-5	20	NA	1000 ppm	Isobutane CAS #75-28-5	10	NE	NE	<b>Appearance and Odor:</b> Clear, colorless or pale yellow liquid with ethanolic odor. <b>Boiling Point:</b> 75°C <b>Vapor Pressure:</b> 43mm @ 20°C <b>Specific Gravity:</b> 0.885 @ 72°F (H <sub>2</sub> O=1) <b>Vapor Density:</b> 1.6 <b>% Volatile (by vol.):</b> 30 <b>Solubility in Water:</b> Not known <b>Evaporation Rate:</b> Approx. 1 (BuOAc=1)		
Chemical	%	OSHA PEL	ACGIH TLV																
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Isobutane CAS #75-28-5	10	NE	NE																
<b>IV Fire and Explosion Hazard Data</b>		<b>V Reactivity Data</b>																	
<b>Flash Point:</b> 55°F (TCC) <b>Flame Extension:</b> 18" (Level 2 Aerosol) <b>Flammable Limits:</b> Lower: 3.3% Upper: 19.0% <b>Autoignition Temp.:</b> 793°F <b>Fire Extinguishing Media:</b> CO <sub>2</sub> , Foam, or Dry Chemical <b>Decomposition Temp.:</b> N/A <b>Special Fire-Fighting Procedures:</b> For small fires: Use CO <sub>2</sub> or dry chemical extinguisher. For large fires: Use copious amounts of water. <b>Unusual Fire and Explosion Hazards:</b> See section VII		<b>Stability:</b> Stable <b>Polymerization:</b> Will not occur <b>Conditions to Avoid:</b> None <b>Incompatible Materials:</b> May soften or damage some synthetics such as rayon. May damage leather. <b>Hazardous Decomposition or Byproducts:</b> None																	
<b>VI Health Hazard Data</b>		<b>VII Precautions for Safe Handling and Use</b>																	
<b>Ingestion (Swallowing):</b> Harmful if swallowed. <b>First Aid:</b> Consult a physician or poison control. <b>Eye Contact:</b> May cause eye injury. <b>First Aid:</b> Immediately flush eyes with plenty of water. Get medical attention. <b>Skin Contact:</b> If skin reaction occurs, wash with soap and water. Get medical attention if irritation persists. <b>Inhalation Toxicity:</b> Avoid breathing spray mist or using in enclosed places. <b>First Aid:</b> Remove to fresh air. <b>Special Notes:</b> Apply only to skin or clothing, do not ingest. Keep out of eyes. Frequent reapplication or saturation is unnecessary. <b>Health Conditions Aggravated by Exposure:</b> None Known <b>Ingredients listed by NTP, OSHA or IARC as Carcinogens or potential carcinogens:</b> None		<b>Steps to be Taken in Case Material is Released or Spilled:</b> Flammable material. Remove all possible ignition sources. Wipe up with absorbent material. Wash small quantities away with soapy water. Prevent bulk quantities from entering open sewers and waterways. <b>Waste Disposal:</b> This material is flammable and must be disposed of in accordance with Local, State and Federal regulations. Do not puncture or incinerate empty container; dispose of properly. <b>Handling &amp; Storage Precautions:</b> Keep away from heat, sparks or open flame. Do not expose treated skin to fire sparks or flame until liquid has dried.																	
<b>VIII Control Measures</b>		<b>IX Transportation Data</b>																	
Read and follow label directions. They are your best guide to using this product effectively, and give necessary safety precautions to protect your health.		<b>DOT Shipping Name -</b> Consumer Commodity <b>DOT Hazard Class -</b> ORM-D																	

The information and statements herein are believed to be reliable but are not to be construed as warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.



Spectrum  
Division of United Industries  
P. O. Box 142642  
St. Louis, MO 63114-0642

# Material Safety Data Sheet

Complies with OSHA's Hazard Communication Standard, 29 CFR 1910.1200

## Hazardous Material Identification System - (HMIS)

HEALTH - 1

REACTIVITY - 0

FLAMMABILITY - 2

PERSONAL - None

**I Trade Name:** Cutter® Skinsations Insect Repellent

**Product Type:** Insect repellent

**Product Item Number:** 51025

**Formula Code Number:** 21-

**EPA Registration Number**

**Manufacturer**

**Emergency Telephone Numbers**

121-76

Chemsico  
Division of United Industries Corporation  
8494 Chapin Industrial Drive  
St. Louis, MO 63114

**For Chemical Emergency:** 1-800-633-2873  
**For Information:** 1-800-767-9927  
**Prepared by:** C. A. Duckworth  
**Date Prepared:** October 18, 2001

## II Hazards Ingredient/Identity Information

Chemical	%	OSHA PEL	ACGIH TLV
DEET (N,N-diethyl-m-toluamide)	7.0	NA	NA
CAS# 134-62-3			
SDA-40 Ethanol	50.0	NA	1000 ppm
CAS# 64-17-5			

## III Physical and Chemical Characteristics

**Appearance & Odor:** Clear, colorless or pale light-yellow liquid, with a fresh, clean scent.  
**Boiling Point:** 75° C  
**Vapor Pressure:** 43 mm at 20° C  
**Specific Gravity:** 0.835 at 72° F (H<sub>2</sub>O = 1)  
**Vapor Density:** 1.6  
**% Volatile (by vol.):** 84%  
**Solubility in Water:** Not known  
**Evaporation Rate:** Approximately 1 (Butyl Acetate = 1)

## IV Fire and Explosive Hazards Data

**Flash Point:** 85° F (PMCC)  
**Flame Extension:** 12-15" (level 1 Aerosol)  
**Autoignition Temperature:** N/A  
**Fire Extinguishing Media:** Carbon dioxide, Foam, Dry chemical  
**Decomposition Temperature:** NA  
**Special Fire-Fighting Procedures:** For Small Fires: Use Carbon dioxide or dry chemical extinguisher. For Large Fires: Use copious amounts of water.  
**Unusual Fire and Explosion Hazards:** Also see Section VII

## V Reactivity Data

**Stability:** Stable  
**Polymerization:** Will not occur  
**Conditions to Avoid:** None  
**Incompatible Materials:** May soften or damage some synthetics such as rayon. May damage leather.  
**Hazardous Decomposition or Byproducts:** None

## VI Health Hazard Data

**Ingestion (Swallowing):** Harmful if swallowed. **First Aid:** Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger.  
**Eye Contact:** May irritate eyes. **First Aid:** Flush with plenty of water. Get medical attention.  
**Skin Contact:** May cause skin reactions in rare cases. If so, wash thoroughly with soap and water. Get medical attention if irritation persists.  
**Special Notes:** Avoid contact with lips, open cuts or irritated skin.  
**Health conditions Aggravated by Exposure:** None known  
**Ingredients listed by NTP, OSHA, or IARC as Carcinogens or Potential Carcinogens:** None

## VII Precautions for Safe Handling and Use

**Steps to be Taken In Case Material is Released or Spilled:** Flammable material. Remove all possible ignition sources. Soak up with absorbent material. Wash small quantities away with soapy water. Prevent bulk quantities from entering open sewers and waterways.  
**Waste Disposal:** This material is flammable. Give to a qualified waste disposal service.  
**Handling & Storage Precautions:** Keep away from heat, sparks, or open flame. Do not expose treated skin to fire sparks or flame until liquid has dried.

## VIII Control Measures

Read and follow label directions. They are your best guide to using this product effectively, and give necessary safety precautions to protect your health.

## IX Transportation Data

**DOT Shipping Name:** Not Regulated by DOT  
**DOT Hazard Class:** None

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**CORNELL****Material Safety  
Data Sheets****Division of Facilities Services****DOD Hazardous Material Information (ANSI Format)  
For Cornell University Convenience Only****EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

<u>Section 1 - Product and Company Identification</u>	<u>Section 9 - Physical &amp; Chemical Properties</u>
<u>Section 2 - Composition/Information on Ingredients</u>	<u>Section 10 - Stability &amp; Reactivity Data</u>
<u>Section 3 - Hazards Identification Including Emergency Overview</u>	<u>Section 11 - Toxicological Information</u>
<u>Section 4 - First Aid Measures</u>	<u>Section 12 - Ecological Information</u>
<u>Section 5 - Fire Fighting Measures</u>	<u>Section 13 - Disposal Considerations</u>
<u>Section 6 - Accidental Release Measures</u>	<u>Section 14 - MSDS Transport Information</u>
<u>Section 7 - Handling and Storage</u>	<u>Section 15 - Regulatory Information</u>
<u>Section 8 - Exposure Controls &amp; Personal Protection</u>	<u>Section 16 - Other Information</u>

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**Section 1 - Product and Company Identification**  
**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

**Product Identification:** EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787

**Date of MSDS:** 01/17/1995 **Technical Review Date:** 12/13/1995

**FSC:** 9140 NIIN: 00-286-5294

**Submitter:** D DG

**Status Code:** C

**MFN:** 02

**Article:** N

**Kit Part:** N



**Manufacturer's Information**

**Manufacturer's Name:** EXXON CO USA, A DIV OF EXXON CORP.  
**Post Office Box:** 2180  
**Manufacturer's Address1:** 800 BELL ST  
**Manufacturer's Address2:** HOUSTON, TX 77252-2180  
**Manufacturer's Country:** US  
**General Information Telephone:** 713-656-2443  
**Emergency Telephone:** 713-656-3424  
**Emergency Telephone:** 713-656-3424  
**MSDS Preparer's Name:** N/P  
**Proprietary:** N  
**Reviewed:** Y  
**Published:** Y  
**CAGE:** 29700  
**Special Project Code:** N

**Item Description**

**Item Name:** DIESEL FUEL  
**Item Manager:**  
**Specification Number:** VV-F-800  
**Type/Grade/Class:** GRADE DF-2  
**Unit of Issue:** GL  
**Unit of Issue Quantity:** X  
**Type of Container:** BULK

**Contractor Information**

**Contractor's Name:** EXXON COMPANY U.S.A.  
**Post Office Box:** 2180  
**Contractor's Address1:**  
**Contractor's Address2:** HOUSTON, TX 77252-2180  
**Contractor's Telephone:** 713-656-5949 / 713-656-3424  
**Contractor's CAGE:** 29700

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**Section 2 - Composition/Information on Ingredients**  
**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

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**Ingredient Name:** PETROLEUM MID-DISTILLATE, FUEL, DIESEL, NO. 2  
**Ingredient CAS Number:** 68476-34-6 **Ingredient CAS Code:** M  
**RTECS Number:** RTECS Code: X  
**=WT:** =WT Code:  
**=Volume:** =Volume Code:  
**>WT:** >WT Code:  
**>Volume:** >Volume Code:  
**<WT:** <WT Code:  
**<Volume:** <Volume Code:  
**% Low WT:** % Low WT Code:  
**% High WT:** % High WT Code:  
**% Low Volume:** % Low Volume Code:



% High Volume: % High Volume Code:

% Text: 100

% Environmental Weight:

Other REC Limits: NONE RECOMMENDED

OSHA PEL: 5 MG/M3 AS OIL MIST OSHA PEL Code: M

OSHA STEL: OSHA STEL Code:

ACGIH TLV: 5 MG/M3 AS OIL MIST ACGIH TLV Code: M

ACGIH STEL: N/P ACGIH STEL Code:

EPA Reporting Quantity:

DOT Reporting Quantity:

Ozone Depleting Chemical: N

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**Section 3 - Hazards Identification, Including Emergency Overview**  
**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

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**Health Hazards Acute & Chronic:** N/P

**Signs & Symptoms of Overexposure:**  
N/P

**Medical Conditions Aggravated by Exposure:**  
N/P

**LD50 LC50 Mixture:** N/P

**Route of Entry Indicators:**

Inhalation: N/P

Skin: N/P

Ingestion: N/P

**Carcinogenicity Indicators**

NTP: N/P

IARC: N/P

OSHA: N/P

**Carcinogenicity Explanation:** N/P

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**Section 4 - First Aid Measures**  
**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

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**First Aid:**  
N/P

---

**Section 5 - Fire Fighting Measures**  
**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

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**Fire Fighting Procedures:**

IF SPILL/LEAK HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE VAPORS & PROTECT MEN ATTEMPTING TO STOP LEAK. WATER SPRAY MAY BE USED TO FLUSH SPILL AWAY.



**Unusual Fire or Explosion Hazard:**

MINIMIZE BREATHING OF GASES, VAPORS, FUMES OR DECOMPOSITION PRODUCTS. USE SUPPLIED-AIR BREATHING EQUIPMENT FOR ENCLOSED/CONFINED SPACES OR AS OTHERWISE NEEDED.

**Extinguishing Media:**

USE DRY CHEMICAL, FOAM OR CARBON DIOXIDE TO EXTINGUISH FIRE. WATER MAY BE INEFFECTIVE. USE WATER TO COOL CONTAINERS

**Flash Point:** Flash Point Text: 140F,60C

**Autoignition Temperature:**

**Autoignition Temperature Text:** >204C

**Lower Limit(s):** 0.9%

**Upper Limit(s):** 7%

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**Section 6 - Accidental Release Measures**

**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

**Spill Release Procedures:**

N/P

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**Section 7 - Handling and Storage**

**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

**Handling and Storage Precautions:****Other Precautions:**

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**Section 8 - Exposure Controls & Personal Protection**

**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

**Respiratory Protection:**

N/P

**Ventilation:**

N/P

**Protective Gloves:**

N/P

**Eye Protection:** N/P**Other Protective Equipment:** N/P**Work Hygienic Practices:** N/P**Supplemental Health & Safety Information:** N/P

---

**Section 9 - Physical & Chemical Properties**

**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

**HCC:** F4

**NRC/State License Number:** N/R

**Net Property Weight for Ammo:** N/R

**Boiling Point:** Boiling Point Text: 160-350C

**Melting/Freezing Point:** Melting/Freezing Text: -0F,-18C

**Decomposition Point:** Decomposition Text: UNKNOWN



Vapor Pressure: <1 MMHG Vapor Density: >5

Percent Volatile Organic Content:

Specific Gravity: 0.86

Volatile Organic Content Pounds per Gallon:

pH: 7

Volatile Organic Content Grams per Liter:

Viscosity: 2.7 CST

Evaporation Weight and Reference: 0.02 (N-BUTYL ACETATE=1)

Solubility in Water: NEGLIGIBLE; <0.1%

Appearance and Odor: CLEAR LIQUID, DYED (MAY BE RED, BLUE OR MIXTURE) FAINT PETROLEUM HYDROCAR. ODOR

Percent Volatiles by Volume: 100

Corrosion Rate: UNKNOWN

---

#### Section 10 - Stability & Reactivity Data

EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787

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Stability Indicator: YES

Materials to Avoid:

AVOID CONTACT WITH STRONG OXIDANTS: LIQUID CHLORINE, CONCENTRATED OXYGEN, SODIUM HYPOCHLORITE, CALCIUM HYPOCHLORITE, ET.

Stability Condition to Avoid:

THIS PRODUCT IS STABLE AND WILL NOT REACT VIOLENTLY WITH WATER.

Hazardous Decomposition Products:

N/P

Hazardous Polymerization Indicator: N/P

Conditions to Avoid Polymerization:

N/P

---

#### Section 11 - Toxicological Information

EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787

---

Toxicological Information:

N/P

---

#### Section 12 - Ecological Information

EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787

---

Ecological Information:

N/P

---

#### Section 13 - Disposal Considerations

EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787

---

Waste Disposal Methods:

N/P

---

#### Section 14 - MSDS Transport Information

EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787

---

Transport Information:

N/P



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**Section 15 - Regulatory Information**  
**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

---

**SARA Title III Information:**

N/P

**Federal Regulatory Information:**

N/P

**State Regulatory Information:**

N/P

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**Section 16 - Other Information**  
**EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**

---

**Other Information:**

N/P

**HMIS Transportation Information****Product Identification:** EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**Transportation ID Number:** 66846**Responsible Party CAGE:** 29700**Date MSDS Prepared:** 01/17/1995**Date MSDS Reviewed:** 12/13/1995**MFN:** 12/13/1995**Submitter:** D DG**Status Code:** C**Container Information****Unit of Issue:** GL**Container Quantity:** X**Type of Container:** BULK**Net Unit Weight:** BULK**Article without MSDS:** N**Technical Entry NOS Shipping Number:****Radioactivity:** N/R**Form:****Net Explosive Weight:** N/R**Coast Guard Ammunition Code:** N/R**Magnetism:** N/P**AF MMAC Code:** NR**DOD Exemption Number:** N/R**Limited Quantity Indicator:****Multiple Kit Number:** 0**Kit Indicator:** N**Kit Part Indicator:** N**Review Indicator:** Y**Additional Data:**

**Department of Transportation Information**  
**DOT Proper Shipping Name:** FLAMMABLE LIQUIDS, N.O.S.



**DOT PSN Code:** GJL

**Symbols:** G

**DOT PSN Modifier:**

**Hazard Class:** 3

**UN ID Number:** UN1993

**DOT Packaging Group:** III

**Label:** FLAMMABLE LIQUID

**Special Provision(s):** B1,B52,T7,T30

**Packaging Exception:** 150

**Non Bulk Packaging:** 203

**Bulk Packaging:** 242

**Maximum Quantity in Passenger Area:** 60 L

**Maximum Quantity in Cargo Area:** 220 L

**Stow in Vessel Requirements:** A

**Requirements Water/Sp/Other:**

#### **IMO Detail Information**

**IMO Proper Shipping Name:** FLAMMABLE LIQUID, N.O.S. o

**IMO PSN Code:** HIA

**IMO PSN Modifier:**

**IMDG Page Number:** 3345

**UN Number:** 1993

**UN Hazard Class:** 3.3

**IMO Packaging Group:** III

**Subsidiary Risk Label:** -

**EMS Number:** 3-07

**Medical First Aid Guide Number:** T

#### **IATA Detail Information**

**IATA Proper Shipping Name:** FLAMMABLE LIQUID, N.O.S. \*

**IATA PSN Code:** MCA

**IATA PSN Modifier:**

**IATA UN Id Number:** 1993

**IATA UN Class:** 3

**Subsidiary Risk Class:**

**UN Packaging Group:** III

**IATA Label:** FLAMMABLE LIQUID

**Packaging Note for Passengers:** 309

**Maximum Quantity for Passengers:** 60L

**Packaging Note for Cargo:** 310

**Maximum Quantity for Cargo:** 220L

**Exceptions:**

#### **AFI Detail Information**

**AFI Proper Shipping Name:** FLAMMABLE LIQUIDS, N.O.S.

**AFI Symbols:** \*

**AFI PSN Code:** MCA

**AFI PSN Modifier:**

**AFI UN Id Number:** UN1993

**AFI Hazard Class:** 3

**AFI Packing Group:** III

**AFI Label:**

**Special Provisions:** P5

**Back Pack Reference:** A7.3



**HAZCOM Label Information****Product Identification:** EXXON OFF ROAD DIESEL 2; PRODUCT CODE 072700-00787**CAGE:** 29700**Assigned Individual:** N**Company Name:** EXXON COMPANY U.S.A.**Company PO Box:** 2180**Company Street Address1:****Company Street Address2:** HOUSTON, TX 77252-2180 US**Health Emergency Telephone:** 713-656-3424**Label Required Indicator:** Y**Date Label Reviewed:** 12/13/1995**Status Code:** C**Manufacturer's Label Number:** N/R**Date of Label:** 12/13/1995**Year Procured:** N/K**Organization Code:** F**Chronic Hazard Indicator:** Y**Eye Protection Indicator:** YES**Skin Protection Indicator:** YES**Respiratory Protection Indicator:** YES**Signal Word:** CAUTION**Health Hazard:** Slight**Contact Hazard:** Slight**Fire Hazard:** Slight**Reactivity Hazard:** None

---

8/7/2002 10:18:05 PM



COASTAL CORP -- GRC G-100 SAE 30 MOTOR OIL

=====

MSDS Safety Information

=====

FSC: 9150

MSDS Date: 04/18/1991

MSDS Num: BYDNL

LIIN: 00N060911

Product ID: GRC G-100 SAE 30 MOTOR OIL

MFN: 01

Responsible Party

Cage: 46684

Name: COASTAL CORP

Address: 9 GREENWAY PLAZA

City: HOUSTON TX 77046

Info Phone Number: 501-735-0020

Emergency Phone Number: 713-877-1400

Preparer's Name: DELNO D MALZAHN

Published: Y

=====

Contractor Summary

=====

Cage: 46684

Name: COASTAL CORP

Address: 9 GREENWAY PLAZA

City: HOUSTON TX 77046

Phone: 713-877-6732

Cage: 9U676

Name: COASTAL CORP

Address: UNKNOWN

Box: UNKNOWN

City: UNKNOWN NK 00000

Phone: UNKNOWN

=====

Ingredients

=====

Name: GRC G-100 SAE 30 MOTOR OIL (CONTAINS ING 2)

% Wt: 100

OSHA PEL: N/K (FP N)

ACGIH TLV: N/K (FP N)

-----

Cas: 64741-53-3

RTECS #: PY8034000

Name: MINERAL OIL, PETROLEUM DISTILLATES, HEAVY NAPHTHENIC; (HEAVY NAPHTHENIC  
PETROLEUM DISTILLATE)

% Wt: 100

OSHA PEL: 300 PPM

ACGIH TLV: 300 PPM

=====

Health Hazards Data

=====

Handling and Disposal

=====

Fire and Explosion Hazard Information

=====

Flash Point Text: 350F, 177C

Extinguishing Media: DRY CHEMICAL, FOAM, CARBON DIOXIDE OR WATER SPRAY.

Fire Fighting Procedures: WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE



EQUIPMENT (FP N). WATER SPRAY MAY BE INEFFECTIVE ON FLAMES BUT SHOULD BE USED TO KEEP FIRE-EXPOSED CNTNRS COOL.  
 Unusual Fire/Explosion Hazard: MAY IGNITE WHEN SUFFICIENT HEAT IS APPLIED.

=====  
 Control Measures  
 =====

=====  
 Physical/Chemical Properties  
 =====

B.P. Text: >600F,>316C  
 M.P/F.P Text: 10F,-12C  
 Vapor Pres: <25 @ 20C  
 Vapor Density: >10  
 Spec Gravity: 0.95 (H\*20)  
 Solubility in Water: NEGLIGIBLE  
 Appearance and Odor: DARK GREEN LIQUID WITH A MILD PETROLEUM ODOR.  
 Percent Volatiles by Volume: NIL

=====  
 Reactivity Data  
 =====

Stability Indicator: YES  
 Stability Condition To Avoid: HEAT, SPARK, FLAME AND BUILD-UP OF STATIC ELECTRICITY.  
 Materials To Avoid: STRONG OXIDIZING AGENTS

=====  
 Toxicological Information  
 =====

=====  
 Ecological Information  
 =====

=====  
 MSDS Transport Information  
 =====

=====  
 Regulatory Information  
 =====

=====  
 Other Information  
 =====

=====  
 HAZCOM Label  
 =====

Product ID: GRC G-100 SAE 30 MOTOR OIL  
 Cage: 46684  
 Company Name: COASTAL CORP  
 Street: 9 GREENWAY PLAZA  
 City: HOUSTON TX  
 Zipcode: 77046  
 Health Emergency Phone: 713-877-1400  
 Label Required IND: Y  
 Date Of Label Review: 06/20/1995  
 Status Code: C  
 Label Date: 06/20/1995  
 Origination Code: G  
 Chronic Hazard IND: Y  
 Eye Protection IND: YES  
 Skin Protection IND: YES  
 Signal Word: WARNING  
 Respiratory Protection IND: YES  
 Health Hazard: Moderate



Contact Hazard: Slight

Fire Hazard: Slight

Reactivity Hazard: None

Hazard And Precautions: COMBUSTIBLE. ACUTE:EYES:MAY PRODUCE IRRITATION AND REDNESS. SKIN:SLIGHTLY IRRITATING. INHALATION:EXPOSURE TO VAPORS OR MIST MAY RESULT IN IRRITATION OF RESPIRATORY TRACT, HEADACHE, DROWSINESS, DIZZINE SS OR UNCONSCIOUSNESS. INGESTION:MAY CAUSE GASTROINTESTINAL IRRITATION, NAUSEA AND VOMITING. ASPIRATION HAZARD IF VOMITING OCCURS. CHRONIC:CANCER HAZARD. CONTAINS UNTREATED PETROLEUM DISTILLATE WHICH IS LISTED AS AN ANIMAL SKIN CARCINOGEN (FP N). PROLONGED OR REPEATED SKIN CONTACT WILL DRY AND DEFAT SKIN, LEADING TO IRRITATION AND DERMATITIS.

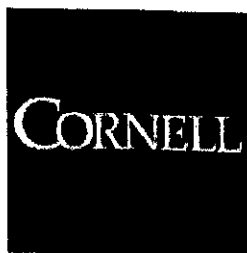
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**Material Safety  
Data Sheets**

Division of Facilities Services

## DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

### UNLEADED GASOLINE

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
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### Section 1 - Product and Company Identification UNLEADED GASOLINE

**Product Identification:** UNLEADED GASOLINE

**Date of MSDS:** 08/01/1989 **Technical Review Date:** 07/04/1999

**FSC:** 9130 **NIIN:** 00-148-7102

**Submitter:** D DG

**Status Code:** C

**MFN:** 01

**Article:** N

**Kit Part:** N



**Manufacturer's Information**

**Manufacturer's Name:** NEWFOUNDLAND DOCKYARD CORP (PROCESSING)  
**Post Office Box:** 97  
**Manufacturer's Address1:** JOBS BRIDGE XING  
**Manufacturer's Address2:** ST. JOHNS, NF 00000  
**Manufacturer's Country:** H5  
**General Information Telephone:** 709-463-8811 (24 HRS) FAX -8058  
**Emergency Telephone:** 709-463-8811 (24 HRS)  
**Emergency Telephone:** 709-463-8811 (24 HRS)  
**MSDS Preparer's Name:** N/P  
**Proprietary:** N  
**Reviewed:** Y  
**Published:** Y  
**CAGE:** 0M8E5  
**Special Project Code:** N

**Item Description**

**Item Name:** GASOLINE,AUTOMOTIVE  
**Item Manager:**  
**Specification Number:** ASTM D4814  
**Type/Grade/Class:** CL A,B,C,D,E,SPEC GR  
**Unit of Issue:** GL  
**Unit of Issue Quantity:** X  
**Type of Container:** UNKNOWN

**Contractor Information**

**Contractor's Name:** NEWFOUNDLAND DOCKYAARD CORP  
**Post Office Box:** 97  
**Contractor's Address1:** JOBS BRIDGE CROSSING  
**Contractor's Address2:** ST JOHNS NEW FOUNDLAND CANADA, NK 00000  
**Contractor's Telephone:** 709-463-8811  
**Contractor's CAGE:** 0M8E5

---

**Section 2 - Composition/Information on Ingredients**  
**UNLEADED GASOLINE**

---

**Ingredient Name:** GASOLINE  
**Ingredient CAS Number:** 8006-61-9 **Ingredient CAS Code:** M  
**RTECS Number:** LX3300000 **RTECS Code:** M  
**=WT: =WT Code:**  
**=Volume: =Volume Code:**  
**>WT: >WT Code:**  
**>Volume: >Volume Code:**  
**<WT: <WT Code:**  
**<Volume: <Volume Code:**  
**% Low WT: % Low WT Code:**  
**% High WT: % High WT Code:**  
**% Low Volume: % Low Volume Code:**



% High Volume: % High Volume Code:  
% Text: 99  
% Environmental Weight:  
Other REC Limits: NONE SPECIFIED  
OSHA PEL: 300 PPM/500 STEL OSHA PEL Code: M  
OSHA STEL: OSHA STEL Code:  
ACGIH TLV: 300 PPM/500 STEL; 9192 ACGIH TLV Code: M  
ACGIH STEL: N/P ACGIH STEL Code:  
EPA Reporting Quantity:  
DOT Reporting Quantity:  
Ozone Depleting Chemical: N

---

### Section 3 - Hazards Identification, Including Emergency Overview

#### UNLEADED GASOLINE

---

**Health Hazards Acute & Chronic:** ACUTE-INHALE: HIGH VAPOR CONCENTRATIONS ARE IRRITATING TO THE EYES, NOSE, THROAT & LUNGS. MAY CAUSE HEADACHE, DIZZINESS, SUFFOCATION, ANESTHETIC & CNS EFFECTS. EYE: IRRITATING. SKIN: FREQUENT/PROLONGED CONTACT MAY IRRITATE & CAUSE RASH. ORAL: HARMFUL/FATAL. IF ASPIRATED INTO THE LUNGS, MAY CAUSE PULMONARY EDEMA. CHRONIC-BLOOD DISORDER

**Signs & Symptoms of Overexposure:**  
HIGH VAPOR CONCENTRATIONS ARE IRRITATING TO THE EYES, NOSE, THROAT & LUNGS. MAY CAUSE HEADACHE, DIZZINESS, SUFFOCATION, ANESTHETIC & CNS EFFECTS. EYE IRRITATING. FREQUENT OR PROLONGED SKIN CONTACT MAY IRRITATE & CAUSE RASH. HARMFUL OR FATAL IF INGESTED. IF ASPIRATED INTO THE LUNGS, MAY CAUSE PULMONARY EDEMA.

**Medical Conditions Aggravated by Exposure:**  
PERSONS WITH PRE-EXISTING SKIN DISORDERS OR IMPAIRED LIVER, KIDNEY OR RESPIRATORY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THE SUBSTANCE.

**LD50 LC50 Mixture:** ORAL LD50 (RAT) IS UNKNOWN

**Route of Entry Indicators:**

Inhalation: YES

Skin: YES

Ingestion: NO

**Carcinogenicity Indicators**

NTP: YES

IARC: YES

OSHA: YES

**Carcinogenicity Explanation:** CONTAINS BENZENE. GASOLINE VAPORS CAUSED KIDNEY CANCER IN RATS AND LIVER CANCER IN MICE.

---

### Section 4 - First Aid Measures



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**UNLEADED GASOLINE**

---

**First Aid:**

GET MEDICAL ATTENTION IF SYMPTOMS PERSIST. SKIN: WASH WITH SOAP & WATER. EYE: FLUSH WITH WATER FOR 15 MINUTES, HOLDING EYELIDS OPEN. INHALED: REMOVE TO FRESH AIR & PROVIDE OXYGEN/CPR IF NEEDED. ORAL: DO NOT INDUCE VOMITING. GET MEDICAL ATTENTION. DO NOT GIVE LIQUID. KEEP AT REST. SMALL AMOUNTS WHICH ACCIDENTALLY ENTER THE MOUTH SHOULD BE RINSED WITH WATER UNTIL TASTE OF GASOLINE IS GONE.

---

**Section 5 - Fire Fighting Measures**  
**UNLEADED GASOLINE**

---

**Fire Fighting Procedures:**

WEAR FULL PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE MODE.

**Unusual Fire or Explosion Hazard:**

EXTREMELY FLAMMABLE. MATERIAL WILL ACCUMULATE STATIC CHARGE. DISCHARGE MAY CAUSE FIRE. FORMS SMOKE, CARBON MONOXIDE, CARBON DIOXIDE, SULFUR OXIDES.

**Extinguishing Media:**

USE CARBON DIOXIDE, FOAM/DRY CHEMICAL. WATER SPRAY MAY BE USED TO KEEP FIRE EXPOSED CONTAINERS COOL & FLUSH SPILLS AWAY.

**Flash Point:** Flash Point Text: -40F, -40C

**Autoignition Temperature:**

**Autoignition Temperature Text:** 495F

**Lower Limit(s):** 1.5

**Upper Limit(s):** 7.6

---

**Section 6 - Accidental Release Measures**  
**UNLEADED GASOLINE**

---

**Spill Release Procedures:**

WEAR PROTECTIVE EQUIPMENT. ELIMINATE SOURCES OF IGNITION. VENTILATE THE AREA. CONTAIN THE SPILL. PICK UP LARGE SPILL WITH NON-SPARKING TOOLS; SMALL SPILLS/RESIDUE WITH INERT ABSORBENT MATERIAL. PLACE IN CONTAINERS. PREVENT ENTERING WATERWAYS/SEWERS.

---

**Section 7 - Handling and Storage**  
**UNLEADED GASOLINE**

---

**Handling and Storage Precautions:****Other Precautions:**

---

**Section 8 - Exposure Controls & Personal Protection**  
**UNLEADED GASOLINE**

---



**Respiratory Protection:**

WHERE CONCENTRATIONS IN AIR MAY EXCEED THE OCCUPATIONAL EXPOSURE LIMITS, NIOSH-APPROVED CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. AT HIGHER CONCENTRATION, WEAR AN ATMOSPHERIC SUPPLIED AIRLINE BREATHING APPARATUS

**Ventilation:**

MECHANICAL (GENERAL AND/OR LOCAL EXHAUST, EXPLOSION-PROOF) VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

**Protective Gloves:**

NEOPRENE, NITRILE, OR POLYVINYL ALCOHOL

**Eye Protection:** USE CHEMICAL SAFETY GOGGLES & FACESHIELD

**Other Protective Equipment:** EYE WASH STATION, QUICK DRENCH SHOWER AND IMPERVIOUS CLOTHING

**Work Hygienic Practices:** DO NOT TAKE INTERNALLY. AVOID EYE AND SKIN CONTACT. DO NOT BREATHE VAPORS.

**Supplemental Health & Safety Information:** N/P

---

**Section 9 - Physical & Chemical Properties**  
**UNLEADED GASOLINE**

---

**HCC:** F1

**NRC/State License Number:** N/R

**Net Property Weight for Ammo:** N/R

**Boiling Point:** =25.C, 77.F **Boiling Point Text:**

**Melting/Freezing Point:** =-60.C, -76.F **Melting/Freezing Text:**

**Decomposition Point:** **Decomposition Text:** N/R

**Vapor Pressure:** 450 **Vapor Density:** 3 - 4

**Percent Volatile Organic Content:**

**Specific Gravity:** 0.73 - 0.83

**Volatile Organic Content Pounds per Gallon:**

**pH:** N/R

**Volatile Organic Content Grams per Liter:**

**Viscosity:** N/K

**Evaporation Weight and Reference:** N/K

**Solubility in Water:** INSOLUBLE

**Appearance and Odor:** GREEN COLORED LIQUID WITH HYDROCARBON ODOR

**Percent Volatiles by Volume:** 100

**Corrosion Rate:** UNKNOWN

---

**Section 10 - Stability & Reactivity Data**  
**UNLEADED GASOLINE**

---

**Stability Indicator:** YES

**Materials to Avoid:**

STRONG OXIDIZING AGENTS, PYROPHORIC MATERIALS

**Stability Condition to Avoid:**

HEAT, SPARKS, STATIC ELECTRICITY, HOT SURFACES, OPEN FLAMES AND OTHER SOURCES OF IGNITION

**Hazardous Decomposition Products:**

FUMES, SMOKE, CARBON MONOXIDE, CARBON DIOXIDE AND SULFUR OXIDES

**Hazardous Polymerization Indicator:** NO



**Conditions to Avoid Polymerization:**  
NOT APPLICABLE

---

**Section 11 - Toxicological Information**  
**UNLEADED GASOLINE**

---

**Toxicological Information:**  
N/P

---

**Section 12 - Ecological Information**  
**UNLEADED GASOLINE**

---

**Ecological Information:**  
N/P

---

**Section 13 - Disposal Considerations**  
**UNLEADED GASOLINE**

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**Waste Disposal Methods:**  
WASTE MAY BE BURNED IN AN APPROVED INCINERATOR OR DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS.

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**Section 14 - MSDS Transport Information**  
**UNLEADED GASOLINE**

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**Transport Information:**  
N/P

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**Section 15 - Regulatory Information**  
**UNLEADED GASOLINE**

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**SARA Title III Information:**  
N/P

**Federal Regulatory Information:**  
N/P

**State Regulatory Information:**  
N/P

---

**Section 16 - Other Information**  
**UNLEADED GASOLINE**

---

**Other Information:**  
N/P

**HMIS Transportation Information**

**Product Identification:** UNLEADED GASOLINE

**Transportation ID Number:** 50957

**Responsible Party CAGE:** 0M8E5

**Date MSDS Prepared:** 08/01/1989

**Date MSDS Reviewed:** 06/30/1992

**MFN:** 06/30/1992

**Submitter:** D DG



Status Code: C

**Container Information**

Unit of Issue: GL

Container Quantity: X

Type of Container: UNKNOWN

Net Unit Weight: N/K

Article without MSDS: N

Technical Entry NOS Shipping Number:

Radioactivity:

Form:

Net Explosive Weight:

Coast Guard Ammunition Code:

Magnetism: N/P

AF MMAC Code:

DOD Exemption Number:

Limited Quantity Indicator:

Multiple Kit Number: 0

Kit Indicator: N

Kit Part Indicator: N

Review Indicator: Y

Additional Data:

**Department of Transportation Information**

DOT Proper Shipping Name: GASOLINE

DOT PSN Code: GTN

Symbols:

DOT PSN Modifier:

Hazard Class: 3

UN ID Number: UN1203

DOT Packaging Group: II

Label: FLAMMABLE LIQUID

Special Provision(s): B33,B101,T8

Packaging Exception:

Non Bulk Packaging: 202

Bulk Packaging: 242

Maximum Quantity in Passenger Area: 5 L

Maximum Quantity in Cargo Area: 60 L

Stow in Vessel Requirements: E

Requirements Water/Sp/Other:

**IMO Detail Information**

IMO Proper Shipping Name: GASOLINE

IMO PSN Code: HRV

IMO PSN Modifier:

IMDG Page Number: 3141

UN Number: 1203

UN Hazard Class: 3.1

IMO Packaging Group: II

Subsidiary Risk Label: -



EMS Number: 3-07

Medical First Aid Guide Number: 311

**IATA Detail Information**

IATA Proper Shipping Name: MOTOR SPIRIT

IATA PSN Code: RMF

IATA PSN Modifier:

IATA UN Id Number: 1203

IATA UN Class: 3

Subsidiary Risk Class:

UN Packaging Group: II

IATA Label: FLAMMABLE LIQUID

Packaging Note for Passengers: 305

Maximum Quantity for Passengers: 5L

Packaging Note for Cargo: 307

Maximum Quantity for Cargo: 60L

Exceptions: A100

**AFI Detail Information**

AFI Proper Shipping Name: GASOLINE

AFI Symbols:

AFI PSN Code: MUC

AFI PSN Modifier:

AFI UN Id Number: UN1203

AFI Hazard Class: 3

AFI Packing Group: II

AFI Label:

Special Provisions: P5

Back Pack Reference: A7.3

**HAZCOM Label Information**

Product Identification: UNLEADED GASOLINE

CAGE: 0M8E5

Assigned Individual: N

Company Name: NEWFOUNDLAND DOCKYAARD CORP

Company PO Box: 97

Company Street Address1: JOBS BRIDGE CROSSING

Company Street Address2: ST JOHNS NEW FOUNDLAND CANADA, NK 00000 CA

Health Emergency Telephone: 709-463-8811 (24 HRS)

Label Required Indicator: Y

Date Label Reviewed: 06/30/1992

Status Code: C

Manufacturer's Label Number: UNKNOWN

Date of Label: 06/30/1992

Year Procured: N/K

Organization Code: F

Chronic Hazard Indicator: N/P

Eye Protection Indicator: YES

Skin Protection Indicator: YES

Respiratory Protection Indicator: YES

Signal Word: DANGER

Health Hazard: Moderate

Contact Hazard: Slight

Fire Hazard: Severe



**Reactivity Hazard: None**

---

8/7/2002 8:24:28 PM




**Material Safety  
Data Sheets**
**Division of Facilities Services**

## DOD Hazardous Material Information (ANSI Format) For Cornell University Convenience Only

### STIHL 50:1 2-CYCLE OIL

Section 1 - Product and Company Identification	Section 9 - Physical & Chemical Properties
Section 2 - Composition/Information on Ingredients	Section 10 - Stability & Reactivity Data
Section 3 - Hazards Identification Including Emergency Overview	Section 11 - Toxicological Information
Section 4 - First Aid Measures	Section 12 - Ecological Information
Section 5 - Fire Fighting Measures	Section 13 - Disposal Considerations
Section 6 - Accidental Release Measures	Section 14 - MSDS Transport Information
Section 7 - Handling and Storage	Section 15 - Regulatory Information
Section 8 - Exposure Controls & Personal Protection	Section 16 - Other Information

The information in this document is compiled from information maintained by the United States Department of Defense (DOD). Anyone using this information is solely responsible for the accuracy and applicability of this information to a particular use or situation.

Cornell University does not in any way warrant or imply the applicability, viability or use of this information to any person or for use in any situation.

### Section 1 - Product and Company Identification STIHL 50:1 2-CYCLE OIL

**Product Identification:** STIHL 50:1 2-CYCLE OIL

**Date of MSDS:** 12/04/1989 **Technical Review Date:** 08/29/1997

**FSC:** 9150 **NIIN:** LIIN: 00N078875

**Submitter:** N EN

**Status Code:** C

**MFN:** 01

**Article:** N

**Kit Part:** N



**Manufacturer's Information**

**Manufacturer's Name:** OLYMPIC OIL LTD  
**Manufacturer's Address1:** 5000 W 41ST ST  
**Manufacturer's Address2:** CIRERO, IL 69659  
**Manufacturer's Country:** US  
**General Information Telephone:** 708-458-8500  
**Emergency Telephone:** 708-458-8500  
**Emergency Telephone:** 708-458-8500  
**MSDS Preparer's Name:** N/P  
**Proprietary:** N  
**Reviewed:** N  
**Published:** Y  
**CAGE:** 0WSZ9  
**Special Project Code:** N

**Contractor Information**

**Contractor's Name:** OLYMPIC OIL LTD  
**Contractor's Address1:** 5000 W 41ST ST  
**Contractor's Address2:** CICERO, IL 60804  
**Contractor's Telephone:** 708-458-8500  
**Contractor's CAGE:** 0WSZ9

---

**Section 2 - Composition/Information on Ingredients**  
**STIHL 50:1 2-CYCLE OIL**

---

**Ingredient Name:** ANTI-OXIDANT, ANTI-WEAR, DISPERSANT  
**Ingredient CAS Number:** **Ingredient CAS Code:** X  
**RTECS Number:** **RTECS Code:** X  
**=WT: =WT Code:**  
**=Volume: =Volume Code:**  
**>WT: >WT Code:**  
**>Volume: >Volume Code:**  
**<WT: <WT Code:**  
**<Volume: <Volume Code:**  
**% Low WT: % Low WT Code:**  
**% High WT: % High WT Code:**  
**% Low Volume: % Low Volume Code:**  
**% High Volume: % High Volume Code:**  
**% Text:** N/K  
**% Enviromental Weight:**  
**Other REC Limits:** N/K  
**OSHA PEL:** N/K (FP N) **OSHA PEL Code:** M  
**OSHA STEL:** **OSHA STEL Code:**  
**ACGIH TLV:** N/K (FP N) **ACGIH TLV Code:** M  
**ACGIH STEL:** N/P **ACGIH STEL Code:**  
**EPA Reporting Quantity:**  
**DOT Reporting Quantity:**  
**Ozone Depleting Chemical:**



**Ingredient Name:** DISPERSANT

**Ingredient CAS Number:** **Ingredient CAS Code:** X

**RTECS Number:** **RTECS Code:** X

**=WT:** **=WT Code:**

**=Volume:** **=Volume Code:**

**>WT:** **>WT Code:**

**>Volume:** **>Volume Code:**

**<WT:** **<WT Code:**

**<Volume:** **<Volume Code:**

**% Low WT:** **% Low WT Code:**

**% High WT:** **% High WT Code:**

**% Low Volume:** **% Low Volume Code:**

**% High Volume:** **% High Volume Code:**

**% Text:** N/K

**% Enviromental Weight:**

**Other REC Limits:** N/K

**OSHA PEL:** N/K (FP N) **OSHA PEL Code:** M

**OSHA STEL:** **OSHA STEL Code:**

**ACGIH TLV:** N/K (FP N) **ACGIH TLV Code:** M

**ACGIH STEL:** N/P **ACGIH STEL Code:**

**EPA Reporting Quantity:**

**DOT Reporting Quantity:**

**Ozone Depleting Chemical:**

**Ingredient Name:** LOW ASH ADDITIVE MIXTURE (CONTAINING INGS 3 & 4

**Ingredient CAS Number:** **Ingredient CAS Code:** X

**RTECS Number:** **RTECS Code:** X

**=WT:** **=WT Code:**

**=Volume:** **=Volume Code:**

**>WT:** **>WT Code:**

**>Volume:** **>Volume Code:**

**<WT:** **<WT Code:**

**<Volume:** **<Volume Code:**

**% Low WT:** **% Low WT Code:**

**% High WT:** **% High WT Code:**

**% Low Volume:** **% Low Volume Code:**

**% High Volume:** **% High Volume Code:**

**% Text:** 6

**% Enviromental Weight:**

**Other REC Limits:** N/K

**OSHA PEL:** N/K (FP N) **OSHA PEL Code:** M

**OSHA STEL:** **OSHA STEL Code:**

**ACGIH TLV:** N/K (FP N) **ACGIH TLV Code:** M

**ACGIH STEL:** N/P **ACGIH STEL Code:**

**EPA Reporting Quantity:**

**DOT Reporting Quantity:**

**Ozone Depleting Chemical:**

**Ingredient Name:** REFINED PETROLEUM LUBE OIL STOCK

**Ingredient CAS Number:** **Ingredient CAS Code:** X

**RTECS Number:** **RTECS Code:** X



=WT: =WT Code:  
=Volume: =Volume Code:  
>WT: >WT Code:  
>Volume: >Volume Code:  
<WT: <WT Code:  
<Volume: <Volume Code:  
% Low WT: % Low WT Code:  
% High WT: % High WT Code:  
% Low Volume: % Low Volume Code:  
% High Volume: % High Volume Code:  
% Text: 85  
% Enviromental Weight:  
Other REC Limits: N/K  
OSHA PEL: N/K (FP N) OSHA PEL Code: M  
OSHA STEL: OSHA STEL Code:  
ACGIH TLV: N/K (FP N) ACGIH TLV Code: M  
ACGIH STEL: N/P ACGIH STEL Code:  
EPA Reporting Quantity:  
DOT Reporting Quantity:  
Ozone Depleting Chemical:

Ingredient Name: SOLVENT  
Ingredient CAS Number: Ingredient CAS Code: X  
RTECS Number: RTECS Code: X  
=WT: =WT Code:  
=Volume: =Volume Code:  
>WT: >WT Code:  
>Volume: >Volume Code:  
<WT: <WT Code:  
<Volume: <Volume Code:  
% Low WT: % Low WT Code:  
% High WT: % High WT Code:  
% Low Volume: % Low Volume Code:  
% High Volume: % High Volume Code:  
% Text: 9  
% Enviromental Weight:  
Other REC Limits: N/K  
OSHA PEL: N/K (FP N) OSHA PEL Code: M  
OSHA STEL: OSHA STEL Code:  
ACGIH TLV: N/K (FP N) ACGIH TLV Code: M  
ACGIH STEL: N/P ACGIH STEL Code:  
EPA Reporting Quantity:  
DOT Reporting Quantity:  
Ozone Depleting Chemical:

---

**Section 3 - Hazards Identification, Including Emergency Overview**  
**STIHL 50:1 2-CYCLE OIL**

---

**Health Hazards Acute & Chronic:** ACUTE: SLIGHTLY TOXIC. SIGNS AND SYMPTOMS OF EXPOSURE: INGESTION MAY CAUSE HEADACHE, DROWSINESS, VOMITING, DIARRHEA,



OR NAUSEA.

**Signs & Symptoms of Overexposure:**  
SEE HEALTH HAZARDS.

**Medical Conditions Aggravated by Exposure:**  
HEART RATE INCREASE.

**LD50 LC50 Mixture:** NONE SPECIFIED BY MANUFACTURER.

**Route of Entry Indicators:**

Inhalation: YES

Skin: NO

Ingestion: NO

**Carcenogenicity Indicators**

NTP: NO

IARC: NO

OSHA: NO

**Carcinogenicity Explanation:** NOT RELEVANT.

---

**Section 4 - First Aid Measures**  
**STIHL 50:1 2-CYCLE OIL**

---

**First Aid:**

INHALATION: REMOVE TO FRESH AIR. SKIN: WASH WITH SOAP AND WATER. EYES: FLUSH WITH LARGE VOLUMES OF WATER FOR AT LEAST 15 MINUTES. INGESTION: DO NOT INDUCE VOMITING. INJECTION EMERGENCY SEEK MD IMMEDIATELY.

---

**Section 5 - Fire Fighting Measures**  
**STIHL 50:1 2-CYCLE OIL**

---

**Fire Fighting Procedures:**

USE NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N). USE WATER TO COOL FIRE EXPOSED CONTAINERS.

**Unusual Fire or Explosion Hazard:**

WATER MAY CAUSE FROTHING, TREAT AS A PETROLEUM PRODUCT FIRE.

**Extinguishing Media:**

USE DRY CHEMICAL FOAM, CARBON DIOXIDE OR WATER FOG.

**Flash Point:** Flash Point Text: 200F,93C

**Autoignition Temperature:**

Autoignition Temperature Text: N/A

Lower Limit(s): N/K

Upper Limit(s): N/K

---

**Section 6 - Accidental Release Measures**  
**STIHL 50:1 2-CYCLE OIL**

---



**Spill Release Procedures:**

REMOVE SOURCES OF HEAT OR IGNITION. CONTAIN SPILL WITH SUITABLE MATERIAL.  
REPORT SPILLS TO LOCAL AUTHORITIES.

---

**Section 7 - Handling and Storage**  
**STIHL 50:1 2-CYCLE OIL**

---

**Handling and Storage Precautions:****Other Precautions:**

**Section 8 - Exposure Controls & Personal Protection**  
**STIHL 50:1 2-CYCLE OIL**

---

**Respiratory Protection:**

USE NIOSH APPROVED RESPIRATOR FOR ORGANIC VAPORS AND MISTS.

**Ventilation:**

LOCAL EXHAUST:REQUIRED IF MIST EXCEEDS 5MG/CU M. MECHANICAL  
(GENERAL):EXPLOSION PROOF.

**Protective Gloves:**

OIL IMPERVIOUS GLOVES.

**Eye Protection:** ANSI APPRVD CHEM WORKERS GOGGLES (FP N).

**Other Protective Equipment:** ANSI APPRVD EYE WASH & DELUGE SHOWER (FP N). WEAR  
BODY COVERING WORK CLOTHES TO AVOID EXPOSURE.

**Work Hygienic Practices:** LAUNDER SOILED WORK CLOTHES BEFORE REUSE.

**Supplemental Health & Safety Information:** NONE SPECIFIED BY MANUFACTURER.

---

**Section 9 - Physical & Chemical Properties**  
**STIHL 50:1 2-CYCLE OIL**

---

**HCC:**

**NRC/State License Number:**

**Net Property Weight for Ammo:**

**Boiling Point:** Boiling Point Text: 290F,143C

**Melting/Freezing Point:** Melting/Freezing Text: N/K

**Decomposition Point:** Decomposition Text: N/K

**Vapor Pressure:** LOW Vapor Density: <1

**Percent Volatile Organic Content:**

**Specific Gravity:** 87 (H\*20=1)

**Volatile Organic Content Pounds per Gallon:**

**pH:** N/K

**Volatile Organic Content Grams per Liter:**

**Viscosity:** N/P

**Evaporation Weight and Reference:** <1 (BUTYL ACETATE =1)

**Solubility in Water:** NOT KNOWN

**Appearance and Odor:** GREEN COLOR WITH A MILD PETROLEUM ODOR.

**Percent Volatiles by Volume:** N/K

**Corrosion Rate:** N/K

---

**Section 10 - Stability & Reactivity Data**  
**STIHL 50:1 2-CYCLE OIL**

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---

**Stability Indicator:** YES

**Materials to Avoid:**

STRONG OXIDANTS.

**Stability Condition to Avoid:**

NONE.

**Hazardous Decomposition Products:**

CO, CO\*2.

**Hazardous Polymerization Indicator:** NO

**Conditions to Avoid Polymerization:**

NOT RELEVANT.

---

**Section 11 - Toxicological Information**

**STIHL 50:1 2-CYCLE OIL**

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**Toxicological Information:**

N/P

---

**Section 12 - Ecological Information**

**STIHL 50:1 2-CYCLE OIL**

---

**Ecological Information:**

N/P

---

**Section 13 - Disposal Considerations**

**STIHL 50:1 2-CYCLE OIL**

---

**Waste Disposal Methods:**

USER MUST CHECK LOCAL & STATE LAWS TO DETERMINE IF THE MATERIAL IS A HAZARDOUS WASTE AT THE TIME OF DISPOSAL. DISPOSAL MUST BE I/A/W FEDERAL, STATE & LOCAL REGULATIONS (FP N).

---

**Section 14 - MSDS Transport Information**

**STIHL 50:1 2-CYCLE OIL**

---

**Transport Information:**

N/P

---

**Section 15 - Regulatory Information**

**STIHL 50:1 2-CYCLE OIL**

---

**SARA Title III Information:**

N/P

**Federal Regulatory Information:**

N/P

**State Regulatory Information:**

N/P

---

**Section 16 - Other Information**

**STIHL 50:1 2-CYCLE OIL**

---

**Other Information:**

---



N/P

**HAZCOM Label Information****Product Identification:** STIHL 50:1 2-CYCLE OIL**CAGE:** 0WSZ9**Assigned Individual:** N**Company Name:** OLYMPIC OIL LTD**Company PO Box:****Company Street Address1:** 5000 W 41ST ST**Company Street Address2:** CICERO, IL 60804 US**Health Emergency Telephone:** 708-458-8500**Label Required Indicator:** Y**Date Label Reviewed:** 08/29/1997**Status Code:** C**Manufacturer's Label Number:****Date of Label:** 08/29/1997**Year Procured:** N/K**Organization Code:** M**Chronic Hazard Indicator:** N**Eye Protection Indicator:** YES**Skin Protection Indicator:** YES**Respiratory Protection Indicator:** YES**Signal Word:** CAUTION**Health Hazard:** Slight**Contact Hazard:** Slight**Fire Hazard:** Slight**Reactivity Hazard:** None

---

8/9/2002 10:02:50 AM



**CORNELL****Material Safety  
Data Sheets****Division of Facilities Services****DOD Hazardous Material Information (ANSI Format)  
For Cornell University Convenience Only****LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

<u>Section 1 - Product and Company Identification</u>	<u>Section 9 - Physical &amp; Chemical Properties</u>
<u>Section 2 - Composition/Information on Ingredients</u>	<u>Section 10 - Stability &amp; Reactivity Data</u>
<u>Section 3 - Hazards Identification Including Emergency Overview</u>	<u>Section 11 - Toxicological Information</u>
<u>Section 4 - First Aid Measures</u>	<u>Section 12 - Ecological Information</u>
<u>Section 5 - Fire Fighting Measures</u>	<u>Section 13 - Disposal Considerations</u>
<u>Section 6 - Accidental Release Measures</u>	<u>Section 14 - MSDS Transport Information</u>
<u>Section 7 - Handling and Storage</u>	<u>Section 15 - Regulatory Information</u>
<u>Section 8 - Exposure Controls &amp; Personal Protection</u>	<u>Section 16 - Other Information</u>

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Cornell University does not in any way warrant or imply the applicability, viability or use of this information to any person or for use in any situation.

**Section 1 - Product and Company Identification**  
**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

**Product Identification:** LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE

**Date of MSDS:** 01/01/1994 **Technical Review Date:** 08/29/2000

**FSC:** NIIN: EMPTY

**Submitter:** N EN

**Status Code:** A

**MFN:** 01

**Article:** N

**Kit Part:** N



**Manufacturer's Information**

**Manufacturer's Name:** STATE CHEMICAL MANUFACTURING CO.  
**Manufacturer's Address1:** 3100 HAMILTON AVENUE  
**Manufacturer's Address2:** CLEVELAND, OH 44114-3701  
**Manufacturer's Country:** US  
**General Information Telephone:** 216-861-7114  
**Emergency Telephone:** (216) 861-7114  
**Other Number for MSDS Information:** M00397  
**Emergency Telephone:** (216) 861-7114  
**MSDS Preparer's Name:** N/K  
**Proprietary:** N  
**Reviewed:** Y  
**Published:** Y  
**CAGE:** 53798

**Contractor Information**

**Contractor's Name:** STATE CHEMICAL MANUFACTURING CO.  
**Contractor's Address1:** 3100 HAMILTON AVENUE  
**Contractor's Address2:** CLEVELAND, OH 44114-3701  
**Contractor's Telephone:** 216-861-7114  
**Contractor's CAGE:** 53798

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**Section 2 - Composition/Information on Ingredients**  
**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Ingredient Name:** THIS PRODUCT CONTAINS NO HAZARDOUS INGREDIENTS AT GREATER THAN 1% AS DEFINED BY FEDERAL AND STATE WORKER RIGHT-TO-KNOW LAWS

**Ingredient CAS Number:** **Ingredient CAS Code:** X

**RTECS Number:** **RTECS Code:** X

**=WT:** **=WT Code:**

**=Volume:** **=Volume Code:**

**>WT:** **>WT Code:**

**>Volume:** **>Volume Code:**

**<WT:** **<WT Code:**

**<Volume:** **<Volume Code:**

**% Low WT:** **% Low WT Code:**

**% High WT:** **% High WT Code:**

**% Low Volume:** **% Low Volume Code:**

**% High Volume:** **% High Volume Code:**

**% Text:** N/P

**% Environmental Weight:**

**Other REC Limits:** N/P

**OSHA PEL:** N/P **OSHA PEL Code:**

**OSHA STEL:** N/P **OSHA STEL Code:**

**ACGIH TLV:** N/P **ACGIH TLV Code:**

**ACGIH STEL:** N/P **ACGIH STEL Code:**

**EPA Reporting Quantity:**

**DOT Reporting Quantity:**

**Ozone Depleting Chemical:**



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**Section 3 - Hazards Identification, Including Emergency Overview**  
**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Health Hazards Acute & Chronic:** EFFECTS OF OVEREXPOSURE: EYE OR SKIN CONTACT MAY CAUSE IRRITATION. INGESTION MAY CAUSE VOMITING OR DIARRHEA. CHRONIC EFFECTS: NONE EXPECTED.

**Signs & Symptoms of Overexposure:**  
SEE HEALTH HAZARDS ACUTE AND CHRONIC (FP N).

**Medical Conditions Aggravated by Exposure:**  
N/P

**LD50 LC50 Mixture:** N/P

**Route of Entry Indicators:**  
**Inhalation:** YES  
**Skin:** YES  
**Ingestion:** YES

**Carcenogenicity Indicators**  
**NTP:** NO  
**IARC:** NO  
**OSHA:** NO

**Carcinogenicity Explanation:** N/P

---

**Section 4 - First Aid Measures**  
**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**First Aid:**  
IF SWALLOWED: DO NOT INDUCE VOMITING. CALL A PHYSICIAN. IF INHALED: REMOVE TO FRESH AIR. SUPPORT BREATHING. CONTACT PHYSICIAN IMMEDIATELY (FP N). IF IN EYES: FLUSH EYES IMMEDIATELY WITH PLENTY OF COOL WATER FOR AT LEAST 15 MINUTES. IF ON SKIN: WASH WITH SOAP AND WATER.

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**Section 5 - Fire Fighting Measures**  
**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Fire Fighting Procedures:**  
TREAT AS PETROLEUM OIL, WATER MAY CAUSE FROTHING. USE NIOSH-APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT (FP N).  
**Unusual Fire or Explosion Hazard:**  
NONE.  
**Extinguishing Media:**  
CO<sub>2</sub>, DRY CHEMICAL, FOAM, SAND, FOG.  
**Flash Point:** =226.7C, 440.F **Flash Point Text:**

**Autoignition Temperature:**



**Autoignition Temperature Text:** N/P

**Lower Limit(s):**

**Upper Limit(s):**

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**Section 6 - Accidental Release Measures**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Spill Release Procedures:**

SWEEP OR SCOOP UP, ABSORB ON SAND, ABSORBENT OR VERMICULITE.

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**Section 7 - Handling and Storage**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Handling and Storage Precautions:**

**Other Precautions:**

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**Section 8 - Exposure Controls & Personal Protection**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Respiratory Protection:**

A NIOSH APPROVED RESPIRATOR APPROPRIATE FOR THE EXPOSURE OF CONCERN (FP N).

**Ventilation:**

NOT NORMALLY REQUIRED.

**Protective Gloves:**

RECOMMENDED (NEOPRENE).

**Eye Protection:** ANSI APPROVED CHEMICAL SAFETY GOGGLES (FP N).

**Other Protective Equipment:** EYEWASH AND DELUGE SHOWER MEETING ANSI DESIGN CRITERIA (FP N).

**Work Hygienic Practices:** N/P

**Supplemental Health & Safety Information:** WEIGHT PER GALLON (POUNDS): 7.51.

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**Section 9 - Physical & Chemical Properties**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**HCC:**

**NRC/State License Number:** N/R

**Net Property Weight for Ammo:** N/R

**Boiling Point:** =221.1C, 430.F **Boiling Point Text:**

**Melting/Freezing Point:** =-23.3C, -10.F **Melting/Freezing Text:**

**Decomposition Point:** **Decomposition Text:** N/P

**Vapor Pressure:** N/P **Vapor Density:** N/P

**Percent Volatile Organic Content:**

**Specific Gravity:** 0.9

**Volatile Organic Content Pounds per Gallon:**

**pH:** N/A

**Volatile Organic Content Grams per Liter:**

**Viscosity:** N/P

**Evaporation Weight and Reference:** N/P



**Solubility in Water:** NEGLIGIBLE

**Appearance and Odor:** SEMI-SOLID BUTTERY LUBRICATING GREASE WITH BLAND ODOR.

**Percent Volatiles by Volume:** 0 BY WT

**Corrosion Rate:** N/P

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**Section 10 - Stability & Reactivity Data**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Stability Indicator:** YES

**Materials to Avoid:**

STRONG OXIDIZERS.

**Stability Condition to Avoid:**

KEEP AWAY FROM SPARKS AND OPEN FLAMES.

**Hazardous Decomposition Products:**

MAY RELEASE CARBON MONOXIDE IF BURNED.

**Hazardous Polymerization Indicator:** NO

**Conditions to Avoid Polymerization:**

N/P

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**Section 11 - Toxicological Information**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Toxicological Information:**

N/P

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**Section 12 - Ecological Information**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Ecological Information:**

N/P

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**Section 13 - Disposal Considerations**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Waste Disposal Methods:**

REMOVE TO LANDFILL. INCINERATE. FOLLOW ALL FEDERAL, STATE AND LOCAL REGULATIONS REGARDING WASTE DISPOSAL.

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**Section 14 - MSDS Transport Information**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Transport Information:**

D.O.T. SHIPPING NAME: N/A. D.O.T. HAZARD CLASS: N/A. D.O.T. ID NO: N/A. D.O.T. LABEL: N/A.

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**Section 15 - Regulatory Information**

**LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**SARA Title III Information:**

N/P

**Federal Regulatory Information:**

N/P

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**State Regulatory Information:**

N/P

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**Section 16 - Other Information****LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE**

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**Other Information:**

HMIS/ NFPA RATINGS: HEALTH - 1, FLAMMABILITY - 1, REACTIVITY - 0, PERSONAL PROTECTION - B.

**HAZCOM Label Information**

**Product Identification:** LB GREASE, LITHIUM BASE MULTI-PURPOSE HI-TEMP GREASE

**CAGE:** 53798

**Assigned Individual:** N

**Company Name:** STATE CHEMICAL MANUFACTURING CO.

**Company PO Box:**

**Company Street Address1:** 3100 HAMILTON AVENUE

**Company Street Address2:** CLEVELAND, OH 44114-3701 US

**Health Emergency Telephone:** (216) 861-7114

**Label Required Indicator:** Y

**Date Label Reviewed:** 08/29/2000

**Status Code:** A

**Manufacturer's Label Number:**

**Date of Label:**

**Year Procured:** N/K

**Organization Code:** F

**Chronic Hazard Indicator:** N

**Eye Protection Indicator:** YES

**Skin Protection Indicator:** YES

**Respiratory Protection Indicator:** YES

**Signal Word:** CAUTION

**Health Hazard:** Slight

**Contact Hazard:** Slight

**Fire Hazard:** Slight

**Reactivity Hazard:** None

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## Attachment 7

### Chemical Specific Training Form



## CHEMICAL-SPECIFIC TRAINING FORM

Location:

Task Order:

HCC:

Trainer:

### TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

### REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:


The HCC will use the product MSDS to provide the following information concerning each of the products listed above.

- ☐ Physical and health hazards
- ☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)
- ☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants will have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and JV II's written hazard communication program will be made available for employee review in the facility/project hazard communication file.



## Attachment 8

Project-Specific Chemical Product  
Hazard Communication Form H&S Forms/Permits



## Project-Specific Chemical Product Hazard Communication Form

This form must be completed prior to performing activities that expose personnel to hazardous chemicals products. Upon completion of this form, the SHSO will verify that training is provided on the hazards associated with these chemicals and the control measures to be used to prevent exposure to JV II and subcontractor personnel. Labeling and MSDS systems will also be explained.

**Project Name:**

### Task Order:

**MSDS's will be maintained at the following location(s):**

## Hazardous Chemical Products Inventory

[illegible]

Refer to SOP HS-107 *Hazard Communication* for more detailed information.



## **Attachment 9**

### **Biological Hazard Fact Sheets**



# Tick-Borne Pathogens

There are 6 notifiable tick-borne pathogens that present a significant field hazard, and in some areas account for more than half of our serious field incidents. These procedures should be applied during any field activity – even those field efforts that are predominantly paved but with bordering vegetation.

## Hazard Control

The methods for controlling exposure to ticks include, in order of most-preferred to least:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acaricide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

## Avoidance and Reduction of Ticks

To the extent practical, tick habitats should be avoided. In areas with significant tick infestation, consider stopping work and withdrawing from area until adequate tick population control can be achieved. Stopping and withdrawing should be considered as seriously as entering an area without proper energy control or with elevated airborne contaminants – tickborne pathogens present risk of serious illness!

In areas where significant population density or infestation exists, tick reduction should be considered. Tick reduction can be achieved by disrupting tick habitats and/or direct population reduction through the use of tick-toxic pesticides (Damminix, Dursban, Sevin, etc.).

Habitat disruption may include only simple vegetative maintenance such as removing leaf litter and trimming grass and brush. Tick populations can be reduced between 72 and 100% when leaf litter alone is removed. In more heavily infested areas, habitat disruption may include grubbing, tree trimming or removal, and pesticide application (Damminix, Dursban, Sevin, etc.). This approach is practical in smaller, localized areas or perimeter areas that require occasional access. Habitat controls are to be implemented with appropriate health and safety controls, in compliance with applicable environmental requirements, and may be best left to the property owner or tenant, or licensed pesticide vendor. Caution should be exercised when using chemical repellents or pesticides in or around areas where environmental or industrial media samples will be collected for analysis.

## Personal Protection

After other prevention and controls are implemented, personal protection is still necessary in controlling exposure to ticks. Personal protection must include all of the following steps:

- So that ticks may be seen on your clothing wear light-colored clothing. Full-body New Tyvek (paper-like disposable coveralls) may also be used.

- To prevent ticks from getting underneath clothing tuck pant legs into socks or tape to boots.

- Wear long-sleeved shirts, a hat, and high boots.

- Apply DEET repellent to exposed skin or clothing per product label.

- Apply permethrin repellent to the outside of boots and clothing before wearing, per product label.

- Frequently check for ticks and remove from clothing.

- At the end of the day search your entire body for ticks (particularly groin, armpits, neck and head) and shower.



To prevent pathogen transmission through mucous membranes or broken/cut skin, wash or disinfect hands and/or wear surgical-style nitrile gloves anytime ticks are handled.

Pregnant individuals and individuals using prescription medications should consult with their physician and/or pharmacists before using chemical repellents. Because human health effects may not be fully known, use of chemical repellents should be kept to a minimum frequency and quantity. Always follow manufacturers' use instructions and precautions. Wash hands after handling, applying, or removing protective gear and clothing. Avoid hand-to-face contact, eating, drinking, smoking, etc. when applying or using repellents. Remove and wash clothes per repellent product label. Chemical repellents should not be used on infants and children.

Vaccinations are generally not available for tick-borne pathogens. Although production of the LYMERix™ Lyme disease vaccination has been ceased, vaccination may still be considered under specific circumstances and with concurrence from the consulting physician. Preventative antibiotic treatment in non-ill individuals who have had a recent tick bite is recommended in specific cases only.

## **Tick Removal**

1. Use fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.
2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. (If this happens, remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.)
3. Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva, hemolymph, gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.
4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.
5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
6. You may wish to save the tick for identification in case you become ill. Your doctor can use the information to assist in making an accurate diagnosis. Place the tick in a plastic bag and put it in your freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag.

**Note:** Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

## **First-Aid and Medical Treatment**

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Consult a healthcare professional if infection or symptoms and effects of tick-borne illnesses are develop.

Medical treatment for tick-borne infections include antibiotics and other medical interventions. Diagnosis of specific illness involves both clinical and laboratory confirmations. Preventative antibiotic treatment in non-ill individuals who have had a recent tick bite is recommended in specific cases only.



Previously infected individuals are not conferred immunity – re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

## **Hazard Recognition**

An important step in controlling tick related hazards is understanding how to identify ticks, their habitats, their geographical locations, and signs & symptoms of tick-borne illnesses.

### **Tick Identification**

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These tick varieties include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick
- Rocky Mountain Wood Tick

These varieties and their geographical locations are illustrated on the following page.

### **Tick Habitat**

In eastern states, ticks are associated with deciduous forest and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow, and other elements. In the north-central states, is generally found in heavily wooded areas often surrounded by broad tracts of land cleared for agriculture. On the Pacific Coast, the bacteria are transmitted to humans by the western black-legged (deer) tick and habitats are more diverse. Here, ticks have been found in habitats with forest, north coastal scrub, high brush, and open grasslands. Coastal tick populations thrive in areas of high rainfall, but ticks are also found at inland locations.

### **Illnesses and Signs & Symptoms**

There are six notifiable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite – normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

1. Lyme (bacteria)
2. RMSF (bacteria)
3. Ehrlichiosis (bacteria)
4. STARI (Southern Tick-Associated Rash Illness) (bacteria)
5. Tularemia (Rabbit Fever) (bacteria)
6. Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs & symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. A variety of long-term symptoms may result when untreated, including debilitating effects and death.



## **Poison Oak (Ivy and Sumac too)**

Reaction to Poison Oak is an allergic response and ranges from no reaction to a severe "rhus" dermatitis. Rhus is the class of poisonous plants which also includes poison ivy and poison sumac, mango, and other urushiol containing plants. 3 of 4 people will develop dermatitis on contact with urushiol.

Shrubs are usually 12" to 30" high, or a tree-climbing vine, with triple leaflets and short, smooth hair underneath. A project site in Portland had 8' tall poison oak bushes. Early berries are fuzzy and white; later, dun-colored. Plants are red and dark green in Spring and Summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in Fall, but the plant loses its (yellowed, then brown) leaves in Winter, leaving toxic stems. All parts of the plant remain toxic throughout the seasons.


Primary contamination results from contact with bruised or broken plant parts that release "toxicodendrol", an oily resin containing the toxic chemical "urushiol".

## **Exposure to Poison Oak is Preventable**

Exposure to poison oak often becomes an OSHA recordable illness. The dermatitis is so severe that many people seek medical care and get prescription cortisone creams to reduce the suffering caused by the itch.

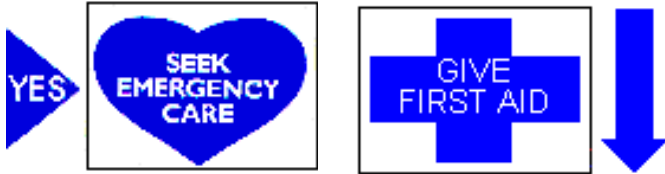
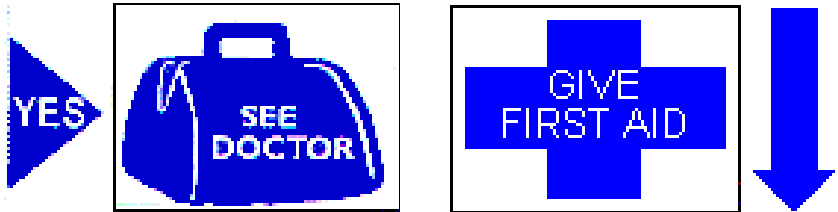



## Exposure to Poison Oak is not an unavoidable part of working outdoors!

- Identify Poison Oak – The best way to prevent exposure is to recognize the plant and avoid working in areas where poison oak is present.
- If you must work in areas with poison oak, contact you project manager and health and safety manager to determine the best procedures to prevent contamination.
- Contamination with poison oak can happen through several pathways. These include
  - Direct skin contact with any part of the plant.
  - Contact with clothing that has been contaminated
  - Contact from removing shoes that have been contaminated. (your shoes are coated with oil)
  - Sitting in a vehicle that has become contaminated
  - Contact with any objects or tools that have become contaminated.
- If you must work on a site with poison oak the following precautions are necessary.
  -  • Do not drive vehicles onto the site where it will come into contact with poison oak. Vehicles which need to work in the area, such as drill rigs or heavy equipment must be washed as soon as possible after leaving the site.
  -  • All tools used in the poison oak area, including those used to cut back poison oak, surveying instruments used in the area, air monitoring equipment or other test apparatus must be decontaminated before they are placed back into the site vehicle. If on-site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated.
  -  • Personal protective equipment, including tyvek coveralls, gloves, and boot covers must be worn. PPE must be placed into plastic bags and sealed if they are not disposed immediately into a trash receptacle.
  -  • As soon as possible following the work, shower to remove any potential contamination. Any body part with suspected or actual exposure should be washed with “Tecnu” or other product designed for removing urushiol. If you do not have Tecnu wash with cold water. Do not take a bath, as the oils can form an invisible film on top of the water and contaminate your entire body upon exiting the bath.
  -  • Tecnu may also be used to decontaminate equipment.
- If there is exposure use the following first aid procedures, or others you may find to alleviate the pain and itch.



## Poison Oak First Aid

<p>Are there any of these problems?</p> <ul style="list-style-type: none"> <li>• Swelling in the throat, tongue and/or lips</li> <li>• A hard time breathing or swallowing</li> <li>• Weakness, dizziness</li> <li>• Bluish lips and mouth</li> <li>• Unconsciousness</li> </ul>	
<p><b>NO</b></p>	<p>Use emergency kit with adrenalin, if available, and Get Emergency Care.</p>
<p>Do you have any of these problems?</p> <ul style="list-style-type: none"> <li>• Skin that is very bright red.</li> <li>• Pus.</li> <li>• Rash that has spread to the mouth, eyes or genitals.</li> <li>• Rash on large areas of the body or the face.</li> </ul>	
<p><b>NO</b></p>	<p>See Doctor and Give first aid before seeing doctor:</p> <ul style="list-style-type: none"> <li>• Take a hot shower (only after rash develops), put the rash area in hot water or pour hot water over it. Make sure the water is not too hot to burn the skin. The hot water causes itching at first, but brings relief later. Do not use soap.</li> <li>• Take an over-the-counter antihistamine, such as Benadryl, as stated on the label.</li> <li>• For weeping blisters: <ul style="list-style-type: none"> <li>• Mix 2 teaspoons of baking soda in 1 quarter (4 cups) of water.</li> <li>• Dip squares of gauze in this mixture.</li> <li>• Cover the blisters with the wet gauze for 10 minutes, four times a day. (Do not apply this to the eyes.)</li> </ul> </li> </ul>
	

## Self-Care/First Aid

- Make sure you wash all clothes and shoes with hot water and a strong soap. Also, bathe pets who have come in contact with poison ivy, oak or sumac. The sap can stay on pets for many days.
- Keep your hands away from your eyes, mouth and face.
- Do not scratch or rub the rash.
- Apply any of these to the skin rash:
- Calamine (not Caladryl) lotion
- Zinc oxide ointment
- Paste made with baking soda - mix 3 teaspoons of baking soda with 1 teaspoon of water
- Take an over-the-counter antihistamine such as Benadryl, as stated on the label

If self-care/first aid measures don't bring relief, call your doctor.



## Attachment 10

### Activity Hazard Analyses (AHAS)



**JV II Task Order 017 – Site 1 Bousch Creek Removal Action  
ACTIVITY HAZARD ANALYSIS – Land/Utility Surveys**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Land/Utility Surveying	Slips, trips, falls	<ul style="list-style-type: none"> <li>• Be aware of poor footing, potential slipping/tripping hazards in the work area (i.e. wet/muddy areas or slopes, system piping at floor level, unprotected holes, ditches, rip rap, utilities or other ground protrusions). Identify and avoid these areas. Wear sturdy hard toe work boots with sufficient ankle support.</li> <li>• Watch foot placement while traversing through wooded areas with briars and heavy brush.</li> </ul>	<p>Standard Level D PPE *</p> <p>* Appropriate work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots, hand and hearing protection (as applicable)</p>
	High Ambient Temperature	<ul style="list-style-type: none"> <li>• Provide fluids to prevent worker dehydration.</li> <li>• Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>• Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Standard Level D PPE (light colored clothing)
	Noise	<ul style="list-style-type: none"> <li>• Personnel exposed to aircraft or other loud noise to wear hearing protection.</li> </ul>	Standard Level D PPE
	Visible Lighting	<ul style="list-style-type: none"> <li>• Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s). If sufficient lighting in the work area is not possible, additional sources of lighting must be provided.</li> </ul>	Standard Level D PPE
	Cuts & Abrasions	<ul style="list-style-type: none"> <li>• Wear long sleeve clothing and proper PPE (eye protection, hard hats, leather gloves, sturdy hard toe boots) when traversing through wooded areas.</li> </ul>	Standard Level D PPE
	Biological	<ul style="list-style-type: none"> <li>• Observe areas for presence of stinging or biting or stinging insects and nests such as spiders (widows/recluse), bee/wasp hives., fire ants mounds etc.)</li> <li>• Prior to starting field activities, notify supervisors of known allergies to stinging insects and location and quantity of antidote in the event the employee becomes incapacitated as a result of an insect bite.</li> <li>• Observe work area for presence of snakes (cottonmouth as primary, copperhead and rattlers as secondary).</li> <li>• Observe wetland/creek, river areas for presence of alligators</li> <li>• Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>• Protect yourself from and avoid exposure to blood borne pathogens.</li> <li>• Exposure to some insect and reptile biological hazards may be temperature dependant</li> </ul>	Standard Level D PPE
	Struck by	<ul style="list-style-type: none"> <li>• Wear reflective vests or high visibility clothing in heavily wooded areas, areas where heavy equipment/troop activities/hunting may be occurring or where vehicular traffic exists.</li> <li>• Project managers and team leaders to 1) evaluate and ensure worker safety in remote/secluded work areas, 2) confirm if potentially dangerous activities (i.e. coincidence of hunting seasons, live ordinance use, military field exercises/activities, transfer of dangerous cargo/materials etc.) could be occurring in or adjacent to any JV II work areas that may jeopardize worker health and safety and 3) reschedule field activities when potentially dangerous activities are not occurring adjacent to JV II work locations. Ensure proper two way communications with workers in remote work areas. Utilize buddy system.</li> </ul>	Standard Level D PPE



**JV II Task Order 017 – Site 1 Bousch Creek Removal Action  
ACTIVITY HAZARD ANALYSIS – Land/Utility Surveys**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Land/Utility Surveying (cont.)	Other	<ul style="list-style-type: none"> <li>• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>• Avoid looking at lasers associated with survey equipment.</li> <li>• Drive 5 mph when driving past troops on maneuvers. If driving past troops on maneuvers could interrupt their activities, vehicle drivers are to bring vehicles to a complete stop in a safe location and yield to troop activities.</li> <li>• Shut down operations in heavy rain, wind and/or lightning.</li> <li>• Buddy System maintained for all phases of work.</li> <li>• Base or local Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>• Report all conditions which may create accidents, injury, illness or property damage to supervisors immediately.</li> </ul>	NA
<b>EQUIPMENT REQUIRED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<ul style="list-style-type: none"> <li>• First Aid Kits</li> <li>• Survey Instruments</li> <li>• Utility Location Equipment</li> </ul>		<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA/PTSP with all task personnel.</li> <li>• Review HSP.</li> <li>• Training per 29 CFR 1910.120 or other training as required for SoW tasks where exposure to site constituents of concern may exist.</li> <li>• 1st Aid/CPR trained individual on-site.</li> <li>• Laser training for survey operators (depending on instrumentation).</li> </ul>



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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Mobilization/Site Preparation (Non Intrusive Activities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization/Site Preparation (non intrusive)	Manual Lifting	<ul style="list-style-type: none"> <li>JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift— especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>Avoid carrying heavy objects above shoulder level.</li> </ul>	Standard Level D PPE *  * Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots, hand and hearing protection, as dictated by task.
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support. Institute and maintain good housekeeping practices.</li> </ul>	Standard Level D PPE
	Noise	<ul style="list-style-type: none"> <li>Personnel exposed to loud working environments shall wear hearing protection.</li> </ul>	Standard Level D PPE
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Standard Level D PPE (light colored clothing)
	Fire Prevention	<ul style="list-style-type: none"> <li>Use only metal safety cans for storage and transfer of fuel.</li> <li>Use funnels and nozzles during fueling operations.</li> <li>Allow warm engine parts (generator motor) to cool before refueling.</li> <li>Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>Review and be cognizant of NAVY Mid-Atlantic Fire Prevention Procedures and Requirements</li> </ul>	Standard Level D PPE
	Struck/pinched	<ul style="list-style-type: none"> <li>Wear reflective warning vests or high visibility clothing.</li> <li>Isolate equipment swing areas from workers, fixed objects or other equipment.</li> <li>Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator.</li> <li>Understand and review hand signals. Designate one person to provide hand signals to equipment operators.</li> <li>Ensure equipment has operable back-up alarms.</li> <li>Avoid positioning between fixed objects and operating equipment.</li> </ul>	Standard Level D PPE



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Mobilization/Site Preparation (Non Intrusive Activities)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Mobilization/Site Preparation (non intrusive)  (continued)	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, and rock piles for evidence and presence of snakes (poisonous).</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellant. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood borne pathogens</li> </ul>	Standard Level D PPE
	Electric Hazards	<ul style="list-style-type: none"> <li>If/when electrical extension cords are required to complete work, extension cords must be: <ul style="list-style-type: none"> <li>- Equipped with third-wire grounding.</li> <li>- Covered, elevated, or protected from damage when passing through work areas.</li> <li>- Protected from pinching if routed through doorways.</li> <li>- Not fastened with staples, hung from nails, or suspended with wire.</li> <li>- Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.</li> </ul> </li> <li>- Rated to handle the voltage/ampereage of equipment.</li> </ul>	Standard Level D PPE
	Other	<ul style="list-style-type: none"> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Verify underground utilities locations and ensure utilities are not in areas impacted by mobilization activities.</li> <li>Shut down operations in heavy rain and lightning.</li> <li>Buddy System maintained for all phases of work.</li> <li>Base Emergency Dispatch numbers programmed into JV II personnel cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>Fire extinguisher (with fuel and electrical sources)</li> <li>Eye wash (small portable type)</li> <li>Miscellaneous power and manual hand tools.</li> <li>Miscellaneous rigging.</li> </ul>		<ul style="list-style-type: none"> <li>Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>Equipment inspections and maintenance.</li> <li>Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific Health and Safety Plan for new site personnel.</li> <li>Review operations/safety manuals for all equipment utilized.</li> <li>Behavior Based Loss Prevention Training (supervisors).</li> <li>Power tool and equipment operators qualified by previous training or experience.</li> </ul>



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**JV II Task Order 017 – Site 1 Removal Action  
Activity Hazard Analysis – Installation of ESC Features**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Installation of ESC Features	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet surfaces slopes, unprotected holes, ditches, rip rap, utilities, or other ground protrusions. Identify and avoid these areas. Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices. Clear JV II controlled designated work area(s) areas of excess material and debris as work progresses.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP *</p> <p>* (Hardhat, safety glasses, sturdy hard toe work boots with overboots or bootcovers, chemical resistant gloves (inner/outer), chemical resistant disposable suit, face protection (as needed))</p>
	Buried Objects	<ul style="list-style-type: none"> <li>Contact Miss Utility of Virginia to secure a utility owner verification request number at (800) 552-7001 or (800) 257-7777 or <a href="http://www.missutilityofvirginia.com">www.missutilityofvirginia.com</a> for utility clearance verification. Keep copies of any written documentation (faxes, email printouts) regarding utility location verification provided by utilities owners in the office project file and in a working field file on-site. Site Supervisor, FTL or SSHO shall photo document owner provided field utility mark-outs as related to proposed limits of ground disturbing activities prior to the start of work.</li> <li>Conduct “third” party utility clearance when the locations of utilities may be in question.</li> <li>Determine if NSN requires the acquisition of a base issued “dig permit” prior to undertaking any ground-disturbing activities. Where available, obtain utility diagrams for the facility. If possible, review proposed locations of intrusive work with NSN POCs knowledgeable in the location of utilities on the facility. Check locations against information from utility mark-out service.</li> <li>Where unknown or unanticipated buried objects (i.e. drums, tanks, cylinders, munitions of explosive concern, soil with unusual staining or odor) are encountered during site operations, ongoing activities shall be immediately suspended.</li> <li>Where unknown or unanticipated buried objects are encountered JV II or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SSHO or PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards (physical or chemical) do not exist. Consult with JV II PM and HSM or HSO prior to resuming activities.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP</p>
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If not, provide sufficient work environment lighting for the work condition.</li> <li>Do not use non-explosion proof lighting/equipment in areas of flammable or combustible gases or liquids.</li> </ul>	<p>Level D<sub>1</sub> or D<sub>2</sub> Modified PPE or as required by HSP</p>



**JV II Task Order 017 – Site 1 Removal Action**  
**Activity Hazard Analysis – Installation of ESC Features**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Installation of ESC Features (continued)	Sharp Objects	<ul style="list-style-type: none"> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects</li> <li>Avoid use of razor knives.</li> <li>Cut away from the body and never towards another worker.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP
	Fire Prevention	<ul style="list-style-type: none"> <li>Provide ABC (or equivalent) fire extinguisher in the work area</li> <li>Eliminate ignition sources in work area. Where ignition sources are required for work, use only controlled sources (sparkers).</li> <li>Secure a NSN Hot Work permit as required by base operations.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP.</li> <li>Provide proper work break or warming regiments.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP
	Noise	<ul style="list-style-type: none"> <li>Personnel exposed to loud working environments shall wear hearing protection unless otherwise directed (proximal to equipment operation).</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP
	Heavy Equipment	<ul style="list-style-type: none"> <li>Seat belts or other restraint system shall be used by equipment operators.</li> <li>Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>Avoid/take care around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>Ensure that a stable ground surface is available for the operation of heavy equipment.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP
	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas for evidence and presence of snakes (poisonous).</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives rabid animals etc.</li> <li>Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Avoid exposure to blood bourne pathogens</li> <li>Check body and clothing for ticks, chiggers, spiders.</li> <li>Consider utilizing insect repellent. For personnel sensitive to skin rashes, consider the use of products with lower s DEET concentrations such as “children’s cutters” or “skin so soft” type products.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP



**JV II Task Order 017 – Site 1 Removal Action**  
**Activity Hazard Analysis – Installation of ESC Features**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Installation of ESC Features (continued)	Chemical Exposure	<ul style="list-style-type: none"> <li>Review contaminants of concern for the project and consult project specific HSP for proper dermal and respiratory protection.</li> <li>All personnel performing this task shall be trained in accordance with 29CFR1910.120/29CFR1926.65 and be deemed “fit for duty” and cleared to wear a respirator by a licensed occupation physician.</li> <li>Follow PPE and action monitoring level requirements identified in the sections 5.0 and 6.0 of the HSP.</li> <li>Do not allow dermal contact or incidental ingestion of excavated materials. Do not kneel or step in soil cuttings or drilling fluids.</li> <li>Exercise good hygiene practices. Always wash hands and then face before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas that are not subject to impacted by drilling/hazwoper regulated operations. Practice “no hand-face” contact at all times. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink or smoke in designated.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP
	Struck/pinched	<ul style="list-style-type: none"> <li>Isolate equipment operation areas from unessential workers, fixed objects or other equipment.</li> <li>Make/maintain eye contact with trenching equipment operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator.</li> <li>Step away from trenching equipment when adjustments to the chain drive mechanism are made.</li> <li>Avoid positioning between fixed objects and operating/rotating equipment.</li> <li>Use caution for pinching hazards (body parts) during operation of the trenching equipment.</li> <li></li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP
	Manual Lifting	<ul style="list-style-type: none"> <li>JV II must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn’t available to have someone assist with the lift— especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to place and maneuver Portable Dams, pumps and hoses into position wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>Avoid carrying heavy objects above shoulder level.</li> </ul>	Level D <sub>1</sub> or D <sub>2</sub> Modified PPE or as required by HSP



**JV II Task Order 017 – Site 1 Removal Action**  
**Activity Hazard Analysis – Installation of ESC Features**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Installation of ESC Features (cont)	Other	<ul style="list-style-type: none"> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Shut down operations in heavy rain and or when lightning approaches. The safe distance recommendation is 30-30 take refuge when thunder sounds within 30 seconds of a lightning flash and do not resume work for 30 minutes after last visible or audible lightning strike.</li> <li>Buddy System maintained for all phases of work.</li> <li>Base Emergency Dispatch numbers programmed into JV II personnel cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>Chain drive trenching equipment</li> <li>Fire extinguisher (with fuel and electrical sources)</li> <li>Eye wash (small portable type)</li> <li>Misc hand Tools</li> </ul>	<ul style="list-style-type: none"> <li>Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>Equipment inspections and maintenance.</li> <li>Hand Tool Inspections</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific Health and Safety Plan for new site personnel.</li> <li>Review operations/safety manuals for all equipment utilized.</li> <li>Behavior Based Loss Prevention Training and 1<sup>st</sup> Aid/CPR (supervisors).</li> </ul>



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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Pre-Characterization of Waste**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
PreCharacterization of Waste	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices. Move/clear debris in the immediate work area to eliminate trip/fall hazards.</li> <li>Fall protection is required if a fall hazard of 6 feet or greater to a lower level exists when performing construction-related activities (construction, alteration, and repair activities), and if a fall hazard of 4 feet or greater to a lower level exists when performing general industry-related activities (non-construction activities at existing facilities). Refer to SOP # 308 - "Fall Protection" for more specific details on fall protection/fall arrest system requirements. Fall protection should be provided to prevent personnel from falling into water. Where fall protection systems are not provided and the danger of drowning exists, U.S. Coast Guard-approved personal flotation devices (PFDs), or life jacket, shall be worn.</li> <li>Avoid walking or working in soft sediments which will not support weight of samplers.</li> </ul>	<p>Modified Level D<sub>1</sub> PPE *</p> <p>*Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots, hand protection (inner and outer chemical resistant gloves),</p>
	Chemical Exposure	<ul style="list-style-type: none"> <li>All personnel performing this task shall be trained in accordance with 29CFR1910.120 and be deemed "fit for duty" by a licensed occupation physician.</li> <li>Follow PPE and action level requirements identified in the site specific HSP.</li> <li>Pregnant or potentially pregnant JV II personnel to review Standard of Practice HSE-120, Reproductive Protection before performing any hazardous or potentially hazardous duty.</li> <li>Do not allow dermal contact or incidental ingestion of impacted soil or groundwater. Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or ground water).</li> <li>Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas that are not subject to impacted by lead.</li> <li>.Following sample collection, sample container lids should be tightened securely to prevent any leaks, and the containers should be rinsed with clean water to ensure that they are free of chemical constituents. Sample activities, sample collection, and equipment decontamination procedures.</li> </ul>	Modified Level D <sub>1</sub> PPE
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Modified Level D <sub>1</sub> PPE (light colored clothing)



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Pre-Characterization of Waste**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
PreCharacterization of Waste (cont.)	Manual Lifting	<ul style="list-style-type: none"> <li>When lifting objects, lift using knees not back. JV II personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift – especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>Secure additional help to carry sample equipment to work areas that can not be directly accessed by site vehicles.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift. Split heavy loads into smaller loads.</li> </ul>	Modified Level D <sub>1</sub> PPE
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Modified Level D <sub>1</sub> PPE
	Cuts/Abrasions	<ul style="list-style-type: none"> <li>Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp/cut edges or hand tools.</li> <li>Avoid use of razor knives. When cutting with knives, cut away from the body and never towards another worker.</li> </ul>	Modified Level D <sub>1</sub> PPE
	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, rock piles for evidence and presence of snakes (poisonous).</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. <b>Notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellant. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood borne pathogens</li> </ul>	Modified Level D <sub>1</sub> PPE
	Other	<ul style="list-style-type: none"> <li>Designate one person to sample and one person to composite collected sediment sample to minimize exertion to workers to collect sample.</li> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/ government facility driving privileges.</li> <li>Buddy System maintained for all phases of work.</li> <li>Shut down operations in heavy rain and lightning.</li> <li>Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA



JV II Task Order 017 – Site 1 Removal Action ACTIVITY HAZARD ANALYSIS – Pre-Characterization of Waste			
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>Hand tools (Hand Auger)</li> <li>Sampling Equipment</li> <li>First Aid Kits</li> <li>Portable eye wash station</li> <li>Fall Protection Equipment</li> </ul>		<ul style="list-style-type: none"> <li>Weekly Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)</li> <li>Visual Inspections of designated work areas</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA/PTSP with all task personnel.</li> <li>Review HSP with new site personnel.</li> <li>29CFR1910.120</li> <li>Behavior Based Loss Prevention Training.</li> </ul>

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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Land Clearing / Grubbing**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Land Clearing/ Grubbing	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices. Pick-up/consolidate removed felled vegetation from the work area, immediately.</li> </ul> <p>Ensure safe footing before starting/operating chainsaws.  Identify and clear a safe escape route prior to engaging in tree felling operations.</p>	<p>Standard Level D PPE *</p> <p>* Work clothes, high visibility clothing, hard hat, safety glasses with face shield, chainsaw chaps, sturdy hard toed work boots, hand and hearing protection</p>
	Struck/pinched by/caught between	<ul style="list-style-type: none"> <li>Isolate swing radius of heavy equipment (excavator/hydraulic mover). Make eye contact with equipment operator before approaching heavy equipment. Do not approach operating heavy equipment from the rear.</li> <li>Evaluate the following before felling trees 1) anything that may cause trouble when the tree falls 2) Evaluate the shape of tree(s), lean of the tree, and decayed or weak spots, 3) Evaluate wind force and direction, 4) the location of people, property utilities and 5) Electrical hazards.</li> <li>Use directional notching for tree felling (top cut ~60° angle to 20-25% tree diameter and bottom horizontal cut to meet termination point of top cut) before through-cutting of trunks/limbs.</li> <li>Keep all personnel clear of the drop zone of the limbs or the topped sections. Create sufficient buffer zone of non-essential ground support personnel. Second tree worker must evaluate drop zone radius of felled limbs and topped tree sections.</li> <li>Use only qualified and experienced personnel to perform land clearing and grubbing operations. Only operators qualified by experience or training to operate heavy equipment and chainsaws/brush cutters/hydraulic mowers.</li> <li>Make eye contact with (chain saw/equipment) operators before approaching work area or drop zone(s).</li> <li>When de-limbing a tree worker shall work on the side on which the limb is being cut, whenever possible. Prohibit cutting overhead, above shoulder height. For large limbs, begin limb reduction from the tip of the limb and move towards the tree trunk.</li> <li>Prohibit standing on, straddling logs while ground cutting. Stand uphill while ground cutting</li> <li>Start relieving cuts on compression side of log first, then make bucking cut on tension side.</li> <li>Prohibit workers from holding logs while being cut</li> <li>Stop saw motor to remove saw if pinched. Don't pull on saw. Bend open cut (i.e. wedge) until saw comes free.</li> </ul>	<p>Standard Level D PPE</p>



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Land Clearing / Grubbing**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Land Clearing/ Grubbing (cont.)	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment and haul truck operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Avoid/take care around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment or haul trucks.</li> </ul>	Standard Level D PPE
	Cuts/Abrasions	<ul style="list-style-type: none"> <li>• A face shield/safety glasses be used during all land clearing operations (i.e. chainsaw, chipping, mowing brush cutting).</li> <li>• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp/cut edges or hand tools.</li> <li>• Utilize daily or more frequent maintenance on saws depending on saw use (Chain sharpening, oiling mechanism, inspection of chain integrity, chain brake, throttle control, hand guard, chain catcher, slack adjustment, stop control).</li> <li>• Operate hydraulic mower in accordance with manufacturer's recommendations. Do not disengage mower deck safety mechanisms. Do not operate mower deck at a height greater than manufacturer's recommendations or allowed by equipment safety devices.</li> <li>• Maintain both hands on chain saw/brush cutter while cutting.</li> <li>• Do not cut limbs/logs in piles.</li> <li>• Avoid cutting actions that may pinch the chain blade.</li> <li>• Idle or shut down chain saw when walking any distance with saw.</li> <li>• Operate chain saws only at &gt;full power when cutting.</li> <li>• Do not use chain saw for cutting shrubs or brush.</li> <li>• Position yourself on the "inside" of tree bends.</li> <li>• Make slow cuts of two inches on tensioned limbs/trees until it starts to break. Consider all limbs under tension as hazardous.</li> <li>• Prohibit use of chainsaws which exhibits any defect.</li> <li>• De-energize and block all jammed or damaged mechanical equipment (i.e. chipper) before initiating repair or maintenance operations.</li> <li>• Use a "push stick" when manually feeding wood chipper.</li> </ul>	Standard Level D PPE



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Land Clearing / Grubbing**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Land Clearing/ Grubbing (cont.)	Manual Lifting	<ul style="list-style-type: none"> <li>JV-1 or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift— especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer and consolidate felled trees, limbs and brush wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>Avoid carrying heavy objects above shoulder level.</li> </ul>	Standard Level D PPE
	Power & Hand Tools	<ul style="list-style-type: none"> <li>Do not set tools/equipment on/in mud, water soil or other surfaces that could cause malfunction of tools.</li> <li>Tools inspected before use. Maintain all tools in a safe condition. Perform daily, or more frequent, maintenance of power tools as dictated by use. At a minimum verify and perform the following: <ul style="list-style-type: none"> <li>No leaks, chain sharpening, oiling mechanism, inspection of chain integrity/ tension, chain brake, throttle control, hand guard, chain catcher, carburetor idle, slack adjustment, stop control.</li> </ul> </li> <li>All required guards/kill switches shall be in place and functional.</li> <li>Hand held powered tools equipped with constant pressure switch.</li> <li>Only personnel qualified by training or experience to use power tools.</li> </ul>	Standard Level D PPE
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Standard Level D PPE (light colored clothing)
	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, rock piles for evidence and presence of snakes (poisonous).</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. <b>Notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellent. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood borne pathogens</li> </ul>	Standard Level D PPE
	Noise	<ul style="list-style-type: none"> <li>Hearing protection shall be worn at all times during active land clearing operations</li> </ul>	Standard Level D PPE



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Land Clearing / Grubbing**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Land Clearing/ Grubbing (cont.)	Fire Prevention	<ul style="list-style-type: none"> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Allow warm engine parts (chainsaw/brush cutters) to cool before refueling.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>• Review and be cognizant of NAVY Mid-Atlantic Fire Prevention Procedures and Requirements</li> </ul>	Standard Level D PPE
	Other	<ul style="list-style-type: none"> <li>• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>• Personnel performing grubbing operations in designated IRA areas must have training and medical surveillance in accordance with 29CFR19190.120.</li> <li>• Buddy System maintained for all phases of work.</li> <li>• Shut down operations in heavy rain and lightning.</li> <li>• Base Emergency Dispatch numbers programmed into JV II personnel cellular phones. Have hospital route maps readily available.</li> <li>• Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Earth moving equipment (excavator, bulldozer, wood chipper)</li> <li>• Chainsaws and brush cutters</li> <li>• Skid Steer with Hydraulic Mower</li> <li>• Fire extinguisher (with fuel and electrical sources)</li> <li>• Eye wash (small portable type)</li> <li>• Miscellaneous power, manual hand tools.</li> <li>• Miscellaneous rigging.</li> </ul>	<ul style="list-style-type: none"> <li>• Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>• Daily equipment inspections and maintenance.</li> <li>• Daily Inspections of hand tools (power) and extension chords if used.</li> <li>• Inspect rigging if utilized.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new site personnel.</li> <li>• Review operations/safety manuals for all equipment utilized.</li> <li>• Behavior Based Loss Prevention Training (supervisors).</li> <li>• Power tool and equipment operators qualified by previous training or experience.</li> </ul>



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**JV II Task Order 017 – Site 1 Removal Action**

**ACTIVITY HAZARD ANALYSIS – Installation of Water Control Dams and Canal Dewatering (as needed)**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Installation of Water Control Dams & Canal Dewatering	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support. Ensure safe footing before installing dams.</li> </ul>	Modified Level D <sub>1</sub> PPE * *Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots, hand protection (inner and outer chemical resistant gloves)
	Struck/pinched by/caught between	<ul style="list-style-type: none"> <li>Isolate swing radius of heavy equipment (excavator). Make eye contact with equipment operator before approaching heavy equipment. Do not approach operating heavy equipment from the rear.</li> <li>Wear reflective warning vests or high visibility clothing.</li> <li>Isolate equipment swing areas from workers, fixed objects or other equipment.</li> <li>Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator.</li> <li>Understand and review hand signals. Designate one person to provide hand signals to equipment operators.</li> <li>Ensure equipment has operable back-up alarms.</li> <li>Step away from heavy equipment when boom adjustments are made.</li> <li>Ensure heavy equipment operator has spotter for obstructed views and backing up</li> <li>Avoid positioning between fixed objects and operating equipment.</li> <li>No one shall walk under or in front of suspended loads. Only tagged, load rated and inspected rigging shall be used to lift loads. Become familiar with vertical, basket and choker load ratings of rigging.</li> <li>Taglines shall be affixed to suspended loads to control live loads. No one shall touch or be in contact with a suspended load.</li> <li>Identify pinch points at discharge hose connection points, starting mechanisms, lifting or maneuvering locations.</li> </ul>	Modified Level D <sub>1</sub> PPE
	Heavy Equipment	<ul style="list-style-type: none"> <li>Seat belts or other restraint system shall be used by heavy equipment and haul truck operators.</li> <li>Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>Avoid/take care around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>Ensure that a stable ground surface is available for the operation of heavy equipment.</li> </ul>	Modified Level D <sub>1</sub> PPE
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Modified Level D <sub>1</sub> PPE (light colored clothing)



**JV II Task Order 017 – Site 1 Removal Action**

**ACTIVITY HAZARD ANALYSIS – Installation of Water Control Dams and Canal Dewatering (as needed)**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Installation of Portable Dams & Canal Dewatering (continued)	Manual Lifting	<ul style="list-style-type: none"> <li>JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift— especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to place and maneuver Portable Dams, pumps and hoses into position wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>Avoid carrying heavy objects above shoulder level.</li> </ul>	Modified Level D <sub>1</sub> PPE
	Splash	<ul style="list-style-type: none"> <li>Assure all discharge hose connections are tight/do not leak. Inspection of discharge hose rubber gaskets. Replace as necessary</li> <li>Secure discharge end of hose(s).</li> <li>Ensure all water pressure is discharged prior to moving or breaking down hoses.</li> <li>Use funnel for fueling of equipment.</li> <li>Do not splash fuel on hot or warm engine components. Report spills immediately.</li> <li>DO Not use leather gloves when handling pumps or pimp hoses. Use only water proof gloves for this task. Do not touch bare skin with gloves that have been in contact with drainage canal sediment or water.</li> </ul>	Modified Level D <sub>1</sub> PPE
	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, rock piles for evidence and presence of snakes (poisonous).</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. <b>Notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellant. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood bourne pathogens</li> </ul>	Modified Level D <sub>1</sub> PPE
	Noise	<ul style="list-style-type: none"> <li>Hearing protection shall be worn where potential for exposure to high noise levels exists.</li> </ul>	Modified Level D <sub>1</sub> PPE
	Fire Prevention	<ul style="list-style-type: none"> <li>Use only metal safety cans for storage and transfer of fuel.</li> <li>Use funnels and nozzles during fueling operations.</li> <li>Allow warm engine parts (gas/diesel pumps, heavy equipment) to cool before refueling.</li> <li>Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>Review and be cognizant of NAVY Mid-Atlantic Fire Prevention Procedures and Requirements</li> </ul>	Standard Level D PPE



**JV II Task Order 017 – Site 1 Removal Action**

**ACTIVITY HAZARD ANALYSIS – Installation of Water Control Dams and Canal Dewatering (as needed)**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Installation of Portable Dams & Canal Dewatering (continued)	Other	<ul style="list-style-type: none"> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Personnel performing this task must have training and medical surveillance in accordance with 29CFR19190.120.</li> <li>Buddy System maintained for all phases of work.</li> <li>Shut down installation operations in heavy rain and lightning. Utilize unmanned dewatering equipment during electrical storms if dewatering operations are required.</li> <li>If electric pumps are utilized instead of gas/diesel, follow safe electrical work practices identified by HSP.</li> <li>Maintain environmental compliance during dewatering operations.</li> <li>Base Emergency Dispatch numbers programmed into JV II personnel cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA

<b>EQUIPMENT REQUIRED</b>	<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<ul style="list-style-type: none"> <li>Earth moving equipment (excavator, dewatering pumps)</li> <li>Fire extinguisher (with fuel and electrical sources)</li> <li>Eye wash (small portable type)</li> <li>Miscellaneous power, manual hand tools.</li> <li>Miscellaneous rigging.</li> </ul>	<ul style="list-style-type: none"> <li>Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>Daily equipment inspections and maintenance.</li> <li>Daily Inspections of extension chords, if used.</li> <li>Inspect rigging if utilized.</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific Health and Safety Plan for new site personnel.</li> <li>Review operations/safety manuals for all equipment utilized.</li> <li>Behavior Based Loss Prevention Training (supervisors).</li> <li>Equipment operators qualified by previous training or experience.</li> </ul>



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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Sediment & PAH Hot Spot Excavation and Waste Management**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Sediment & PAH Hot Spot Excavation and Waste Management	Chemical Exposure	<ul style="list-style-type: none"> <li>All personnel performing this task shall be trained in accordance with 29CFR1910.120 and been rolled in a medical monitoring program.</li> <li>Perform Air Monitoring as identified in section 5.0 of the HSP. Follow PPE and action level requirements identified in the site specific HSP.</li> <li>Where site conditions change or action levels are exceeded contact the HSM for consultation.</li> <li>Pregnant or potentially pregnant JV II personnel to review Standard of Practice HSE-120, Reproductive Protection before performing any hazardous or potentially hazardous duty.</li> <li>Do not allow dermal contact or incidental ingestion of impacted soil or groundwater. Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil/sediment or ground water) without first donning proper PPE.</li> <li>Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> </ul>	<p>Modified Level D<sub>1</sub> or D<sub>2</sub> PPE or as required by HSP *</p> <p>D: Work clothes, reflective vests, hard hat, safety glasses and sturdy hard toed work boots, hearing and hand protection as necessary for task.</p> <p>D<sub>1</sub> : D + hand protection (inner and outer chemical resistant gloves)</p> <p>D<sub>2</sub>: D<sub>1</sub>+ chemical resistant suits and boot covers, face protection (as needed)</p>
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices.</li> <li>Avoid walking on polyethylene sheeting of stockpiles to the extent possible, especially when wet. Use 2 people minimum to cover soil stockpiles and secure additional personnel when windspeed is greater than 5 mph (estimated).</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>Frequent intake of non- caffeinated to prevent dehydration.</li> <li>Obtain and review weather forecast– be aware of predicted weather systems.</li> <li>Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	<p>Level D, Modified Level D<sub>1</sub> or D<sub>2</sub> PPE or as required by HSP *</p> <p>Warm multi-layered clothing including hard hat liners and foul weather gear, as necessary</p>



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Sediment & PAH Hot Spot Excavation and Waste Management**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Sediment & PAH Hot Spot Excavation and Waste Management (Cont.)	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>Ensure equipment has operable back-up alarms.</li> <li>Step away from heavy equipment when adjustments (positioning) are made.</li> <li>Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Manual Lifting	<ul style="list-style-type: none"> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift – especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Fire Prevention	<ul style="list-style-type: none"> <li>Use only metal safety cans for storage and transfer of fuel.</li> <li>Use funnels and nozzles during fueling operations.</li> <li>Allow warm engine parts (small engines) to cool before refueling.</li> <li>Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>Maintain flammable/combustible materials in flammable lock-up when not in use.</li> <li>Review and be cognizant of NSFT Fire Prevention Procedures and Requirements</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Heavy Equipment	<ul style="list-style-type: none"> <li>Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>Ensure that a stable ground surface is available for the operation of heavy equipment.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Sediment & PAH Hot Spot Excavation and Waste Management**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Sediment & PAH Hot Spot Excavation and Waste Management (Cont.)	Buried Objects	<ul style="list-style-type: none"> <li>For soil excavation/removal activities verify Miss Utility of Maryland dig excavation clearance notifications remain valid. Update notifications as may be required by Miss Utility of Maryland requirements.</li> <li>Where unknown or unanticipated buried objects are encountered JV II or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SSHO or PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards (physical or chemical) do not exist. Consult with JV II PM and HSM prior to resuming activities.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, and rock piles for evidence and presence of snakes (poisonous).</li> <li>Avoid contact with rodents.</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellant. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood borne pathogens</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Overhead Utilities	<ul style="list-style-type: none"> <li>Maintain proper separation between Power Transmission Lines and over overhead utilities. See Electric Safety section for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>Do not swing excavator boom toward overhead utilities. Be cognizant of utility pole guy wires.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Noise	<ul style="list-style-type: none"> <li>Wear hearing protection in loud work environments.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Other	<ul style="list-style-type: none"> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Buddy System maintained for all phases of work.</li> <li>Shut down operations in heavy rain and lightning.</li> <li>Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> </ul> <p>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</p>	NA



JV II Task Order 017 – Site 1 Removal Action ACTIVITY HAZARD ANALYSIS – Sediment & PAH Hot Spot Excavation and Waste Management			
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>• Track Excavator /Skid Loader</li> <li>• Haul Trucks</li> <li>• First Aid Kits</li> <li>• Fire Extinguishers (fuel storage/equipment)</li> <li>• Portable eye wash station</li> </ul>		<ul style="list-style-type: none"> <li>• Weekly Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)</li> <li>• Visual Inspections of designated work areas to identify and address hazardous conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new personnel.</li> <li>• Behavior Based Loss Prevention Training (supervisors).</li> <li>• 1<sup>st</sup> Aid/CPR , 29CFR1910.120</li> </ul>



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Site Personnel:	<hr/>	<hr/>	Date/Time: <hr/>
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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Loading of Excavated Material for T&D**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Loading of Excavated Material for T&D	Chemical Exposure	<ul style="list-style-type: none"> <li>All personnel performing this task shall be trained in accordance with 29CFR1910.120 and been rolled in a medical monitoring program.</li> <li>Perform Air Monitoring as identified in section 5.0 of the HSP. Follow PPE and action level requirements identified in the site specific HSP.</li> <li>Where site conditions change or action levels are exceeded contact the HSM for consultation.</li> <li>Pregnant or potentially pregnant JV II personnel to review Standard of Practice HSE-120, Reproductive Protection before performing any hazardous or potentially hazardous duty.</li> <li>Do not allow dermal contact or incidental ingestion of impacted soil or groundwater. Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil/sediment or ground water) without first donning proper PPE.</li> <li>Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> </ul>	<p>Modified Level D<sub>1</sub> or D<sub>2</sub> PPE or as required by HSP *</p> <p>D: Work clothes, reflective vests, hard hat, safety glasses and sturdy hard toed work boots, hearing and hand protection as necessary for task.</p> <p>D<sub>1</sub> : D + hand protection (inner and outer chemical resistant gloves)</p> <p>D<sub>2</sub>: D<sub>1</sub>+ chemical resistant suits and boot covers, face protection (as needed)</p>
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices.</li> <li>Avoid walking on polyethylene sheeting of stockpiles to the extent possible, especially when wet. Use 2 people minimum to cover soil stockpiles and secure additional personnel when wind speed is greater than 5 mph (estimated).</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>Frequent intake of non- caffeinated to prevent dehydration.</li> <li>Obtain and review weather forecast– be aware of predicted weather systems.</li> <li>Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	<p>Level D, Modified Level D<sub>1</sub> or D<sub>2</sub> PPE or as required by HSP *</p> <p>Warm multi-layered clothing including hard hat liners and foul weather gear, as necessary</p>



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Loading of Excavated Material for T&D**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Loading of Excavated Material for T&D (Cont.)	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>• Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Manual Lifting	<ul style="list-style-type: none"> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift – especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Fire Prevention	<ul style="list-style-type: none"> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Allow warm engine parts (small engines) to cool before refueling.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>• Maintain flammable/combustible materials in flammable lock-up when not in use.</li> <li>• Review and be cognizant of NSFT Fire Prevention Procedures and Requirements</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Loading of Excavated Material for T&D**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Loading of Excavated Material for T&D (Cont.)	Haul Trucks	<ul style="list-style-type: none"> <li>Stay clear of operating envelop of haul trucks. All haul trucks should be equipped with an operational backing alarm.</li> <li>Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots or provided a spotter.</li> <li>When approaching a haul area, employees should make eye contact and communicate their intentions directly with the haul truck operator. Do not assume drivers see you.</li> <li>Verify haul trucks stay on designated haul roads.</li> <li>Do not approach haul trucks from the rear or other blind spots.</li> <li>Haul truck drivers to remain in cab during loading. Do not allow haul truck drivers to set loaded soil while covering loads before shipment.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, and rock piles for evidence and presence of snakes (poisonous).</li> <li>Avoid contact with rodents.</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellant. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood borne pathogens</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Overhead Utilities	<ul style="list-style-type: none"> <li>Maintain proper separation between Power Transmission Lines and over overhead utilities. See Electric Safety section for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>Do not swing excavator boom/loader bucket toward overhead utilities. Be cognizant of utility pole guy wires positions. Verify haul trucks have sufficient clearance under overhead utilities. Do not raise dump bodies near over head utilities.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Noise	<ul style="list-style-type: none"> <li>Wear hearing protection in loud work environments.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area.</li> </ul>	Level D, Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Loading of Excavated Material for T&D**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Loading of Excavated Material for T&D (Cont.)	Other	<ul style="list-style-type: none"> <li>• Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>• Buddy System maintained for all phases of work.</li> <li>• Shut down operations in heavy rain and lightning.</li> <li>• Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>• Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
<b>EQUIPMENT REQUIRED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
Track Excavator /Wheel Loader Haul Trucks <ul style="list-style-type: none"> <li>• First Aid Kits</li> <li>• Fire Extinguishers (fuel storage/equipment)</li> <li>• Portable eye wash station</li> </ul>		<ul style="list-style-type: none"> <li>• Weekly Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)</li> <li>• Visual Inspections of designated work areas to identify and address hazardous conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Review AHA with all task personnel</li> <li>• Review Site Specific Health and Safety Plan for new personnel.</li> <li>• Behavior Based Loss Prevention Training (supervisors).</li> <li>• 1<sup>st</sup> Aid/CPR , 29CFR1910.120</li> </ul>



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**SIGNATURE**

Supervisor Name:

Date/Time: \_\_\_\_\_

**Safety Officer Name:**

Date/Time:

**Site Personnel:**

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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Sediment Dewatering Operations**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Sediment Dewatering Operations	Chemical Exposure	<ul style="list-style-type: none"> <li>All personnel performing this task shall be trained in accordance with 29CFR1910.120 and been rolled in a medical monitoring program.</li> <li>Perform Air Monitoring as identified in section 5.0 of the HSP. Follow PPE and action level requirements identified in the site specific HSP.</li> <li>Where site conditions change or action levels are exceeded contact the HSM for consultation.</li> <li>Pregnant or potentially pregnant JV II personnel to review Standard of Practice HSE-120, Reproductive Protection before performing any hazardous or potentially hazardous duty.</li> <li>Do not allow dermal contact or incidental ingestion of impacted soil or groundwater. Skin contact with contaminated water, soils, debris, or equipment shall be avoided at all times. Do not kneel or step in potentially contaminated media (soil or ground water) without first donning proper PPE.</li> <li>Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> </ul>	<p>Modified Level D<sub>1</sub> or D<sub>2</sub> PPE or as required by HSP *</p> <p>D: Work clothes, reflective vests, hard hat, safety glasses and sturdy hard toed work boots, hearing and hand protection as necessary for task.</p> <p>D<sub>1</sub> : D + hand protection (inner and outer chemical resistant gloves)</p> <p>D<sub>2</sub>: D<sub>1</sub>+ chemical resistant suits and boot covers, face protection (as needed)</p>
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices.</li> <li>Avoid walking on polyethylene sheeting of stockpiles to the extent possible, especially when wet. Use 2 people minimum to cover soil stockpiles and secure additional personnel when wind speed is greater than 5 mph (estimated).</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>Frequent intake of non- caffeinated to prevent dehydration.</li> <li>Obtain and review weather forecast– be aware of predicted weather systems.</li> <li>Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	<p>Modified Level D<sub>1</sub> or D<sub>2</sub> PPE or as required by HSP *</p> <p>Warm multi-layered clothing including hard hat liners and foul weather gear, as necessary</p>



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Sediment Dewatering Operations**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Sediment Dewatering Operations (Cont.)	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>• Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>• Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>• Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>• Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>• Ensure equipment has operable back-up alarms.</li> <li>• Step away from heavy equipment when adjustments (positioning) are made.</li> <li>• Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Manual Lifting	<ul style="list-style-type: none"> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>• When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift – especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>• Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Fire Prevention	<ul style="list-style-type: none"> <li>• Use only metal safety cans for storage and transfer of fuel.</li> <li>• Use funnels and nozzles during fueling operations.</li> <li>• Allow warm engine parts (small engines) to cool before refueling.</li> <li>• Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>• Maintain flammable/combustible materials in flammable lock-up when not in use.</li> <li>• Review and be cognizant of NSFT Fire Prevention Procedures and Requirements</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Heavy Equipment	<ul style="list-style-type: none"> <li>• Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>• Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>• Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>• Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>• Ensure that a stable ground surface is available for the operation of heavy equipment.</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Sediment Dewatering Operations**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Sediment Dewatering Operations (Cont.)	Buried Objects	<ul style="list-style-type: none"> <li>For soil excavation/removal activities verify Miss Utility of Maryland dig excavation clearance notifications remain valid. Update notifications as may be required by Miss Utility of Maryland requirements.</li> <li>Where unknown or unanticipated buried objects are encountered JV II or subcontractor personnel shall 1) secure equipment to the extent possible, without causing bodily injury, 2) evacuate the work area and 3) immediately notify the site manager, SSHO or PM of the encountered condition. Work may only resume with appropriate documentation/notification that exposure hazards (physical or chemical) do not exist. Consult with JV II PM and HSM prior to resuming activities.</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, and rock piles for evidence and presence of snakes (poisonous).</li> <li>Avoid contact with rodents.</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellant. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood borne pathogens</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Overhead Utilities	<ul style="list-style-type: none"> <li>Maintain proper separation between Power Transmission Lines and over overhead utilities. See Electric Safety section for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>Do not swing excavator boom toward overhead utilities. Be cognizant of utility pole guy wires.</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Noise	<ul style="list-style-type: none"> <li>Wear hearing protection in loud work environments.</li> </ul>	Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> </ul>	L Modified Level D <sub>1</sub> or D <sub>2</sub> PPE or as required by HSP *



JV II Task Order 017 – Site 1 Removal Action ACTIVITY HAZARD ANALYSIS – Sediment Dewatering Operations			
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Sediment Dewatering Operations (Cont.)	Other	<ul style="list-style-type: none"> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Buddy System maintained for all phases of work.</li> <li>Shut down operations in heavy rain and lightning.</li> <li>Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>Track Excavator, Wheel Loader, pumps</li> <li>Drying agent</li> <li>First Aid Kits</li> <li>Fire Extinguishers (fuel storage/equipment)</li> <li>Portable eye wash station</li> </ul>		<ul style="list-style-type: none"> <li>Weekly Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)</li> <li>Visual Inspections of designated work areas to identify and address hazardous conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific Health and Safety Plan for new personnel.</li> <li>Behavior Based Loss Prevention Training (supervisors).</li> <li>1<sup>st</sup> Aid/CPR , 29CFR1910.120</li> </ul>



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**Site Personnel:**

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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Back Filling and Other Site Restoration**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Backfilling and Other Site Restoration	Stuck by/Pinched Caught in Between	<ul style="list-style-type: none"> <li>Sufficient separation between ground support personnel and the operating heavy equipment must be maintained.</li> <li>Wear reflective vests or high visibility clothing to promote visibility of ground personnel by equipment operators.</li> <li>Isolate equipment swing areas from workers, fixed objects or other equipment. Ground personnel shall avoid positioning themselves between fixed objects, operating equipment. Make/maintain eye contact with operators before approaching equipment. Do not approach equipment from rear or from blind spot of operator. Stay out of the swing radius of operating heavy equipment.</li> <li>Understand and review hand signals. Designate one person to provide hand signals to equipment operators performing lifting/hoisting operations.</li> <li>Ensure equipment has operable back-up alarms.</li> <li>Step away from heavy equipment when adjustments (positioning) are made.</li> <li>Ensure heavy equipment operator has spotter for obstructed views and backing up.</li> <li>Do not place fingers between pipe joints when setting culvert pieces. Use pry bar if necessary.</li> </ul>	<p>Standard Level D PPE or as required by HSP*</p> <p>* Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots, hand and hearing protection, as dictated by task.</p>
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet/steep slopes, stumps/roots, unprotected holes, ditches, rip rap, utilities, ground protrusions. Observe and avoid areas of unprotected holes, ramps and ground penetrations or protrusions (stumps, roots, holes curbs, utility structures etc). Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices.</li> <li>Avoid walking on polyethylene sheeting of stockpiles to the extent possible, especially when wet. Use 2 people minimum to cover soil stockpiles and secure additional personnel when wind speed is greater than 5 mph (estimated).</li> </ul>	Standard Level D PPE or as required by HSP*
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Standard Level D PPE or as required by HSP*
	Low Ambient Temperature	<ul style="list-style-type: none"> <li>Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in cool weather.</li> <li>Frequent intake of non-caffeinated fluids to maintain body core temperature.</li> <li>Frequent intake of non- caffeinated to prevent dehydration.</li> <li>Obtain and review weather forecast – be aware of predicted weather systems.</li> <li>Observe one (buddy system) another for initial signs of cold-related disorders.</li> <li>Frequent observance of Wind Chill Chart (HSP) to assist with work warming regiment determination and frostbite avoidance</li> </ul>	<p>Standard Level D PPE or as required by HSP*</p> <p>Warm multi-layered clothing including hard hat liners and foul weather gear, as necessary</p>



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Back Filling and Other Site Restoration**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Backfilling and Other Site Restoration (Cont.)	Manual Lifting	<ul style="list-style-type: none"> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift – especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> </ul>	Standard Level D PPE or as required by HSP*
	Fire Prevention	<ul style="list-style-type: none"> <li>Use only metal safety cans for storage and transfer of fuel.</li> <li>Use funnels and nozzles during fueling operations.</li> <li>Allow warm engine parts (small engines) to cool before refueling.</li> <li>Appropriately sized, easily accessible ABC fire extinguisher in work area.</li> <li>Maintain flammable/combustible materials in flammable lock-up when not in use.</li> <li>Review and be cognizant of NSFT Fire Prevention Procedures and Requirements</li> </ul>	Standard Level D PPE or as required by HSP*
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area.</li> </ul>	Standard Level D PPE or as required by HSP*
	Heavy Equipment	<ul style="list-style-type: none"> <li>Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>Ensure that a stable ground surface is available for the operation of heavy equipment.</li> </ul>	Standard Level D PPE or as required by HSP*
	Haul Trucks	<ul style="list-style-type: none"> <li>Stay clear of operating envelop of haul trucks. All haul trucks should be equipped with an operational backing alarm.</li> <li>Haulage trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots or provided a spotter.</li> <li>When approaching a haul area, employees should make eye contact and communicate their intentions directly with the haul truck operator. Do not assume drivers see you.</li> <li>Verify haul trucks stay on designated haul roads.</li> <li>Do not approach haul trucks from the rear or other blind spots.</li> <li>Haul truck drivers to remain in cab during loading. Do not allow haul truck drivers to set loaded soil while covering loads before shipment.</li> <li>Ground personnel shall not position themselves in the flipover radius of fill haul trucks</li> </ul>	Standard Level D PPE or as required by HSP*



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Back Filling and Other Site Restoration**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Backfilling and Other Site Restoration (Cont.)	Biological	<ul style="list-style-type: none"> <li>Observe ground surfaces especially in wet or grassy areas, tree trunks, and rock piles for evidence and presence of snakes (poisonous).</li> <li>Avoid contact with rodents.</li> <li>Observe ground surfaces or surrounding vegetation or structures for presence fire ants, spiders, bee/wasp hives etc.</li> <li>Observe areas for presence of stinging insects. Prior to starting field activities, <b>notify supervisors of known allergies to stinging insects and location of antidotes.</b></li> <li>Use insect repellant. Tape pant legs to boots. Frequently check body and clothing for ticks, chiggers, spiders.</li> <li>Avoid exposure to blood borne pathogens</li> </ul>	Standard Level D PPE or as required by HSP*
	Overhead Utilities	<ul style="list-style-type: none"> <li>Maintain proper separation between Power Transmission Lines and over overhead utilities. See Electric Safety section for references to proper separation between operating equipment and power transmission lines/overhead utilities.</li> <li>Do not swing excavator boom toward overhead utilities. Be cognizant of utility pole guy wires positions.</li> </ul>	Standard Level D PPE or as required by HSP*
	Noise	<ul style="list-style-type: none"> <li>Wear hearing protection in loud work environments.</li> </ul>	Standard Level D PPE or as required by HSP*
	Material Handling	<ul style="list-style-type: none"> <li>Only one person shall signal the equipment operator during material handling/lifting operations. This person shall be able to communicate with the operator(s) with the appropriate hand signals.</li> <li>Rigging shall be inspected prior to use.</li> <li>Only load rated (tagged or labeled) rigging shall be utilized for lifting operations. User shall familiarize themselves with design load rate capacities (i.e. vertical, basket/cradle or choker applications) for the selected rigging.</li> <li>No one shall walk under or in front of suspended loads. Loads shall not be lifted over ground personnel.</li> <li>Tag lines shall be attached to every load being lifted. Tag lines will be used for all suspended loads so that riggers and tenders will not have to be in direct contact with any suspended load while controlling position or orientation. Ground personnel shall not place there hands on the suspended load. Make sure the load is stabilized and can not flip over prior approaching the load.</li> <li>Equipment operators shall not leave the cab of the equipment while they are lifting a load unless the load has been delivered to its intended transport location or the load has been fully secured (no potential for rolling onto or crushing ground personnel) and the equipment and controls are fully secured.</li> </ul>	Standard Level D PPE or as required by HSP*



JV II Task Order 017 – Site 1 Removal Action ACTIVITY HAZARD ANALYSIS – Back Filling and Other Site Restoration			
Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Backfilling and Other Site Restoration (Cont.)	Other	<ul style="list-style-type: none"> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Buddy System maintained for all phases of work.</li> <li>Shut down operations in heavy rain and lightning.</li> <li>Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately.</li> </ul>	NA
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>Track Excavator /Skid Loader</li> <li>Haul Trucks</li> <li>First Aid Kits</li> <li>Fire Extinguishers (fuel storage/equipment)</li> <li>Portable eye wash station</li> <li>Misc. hand tools</li> </ul>		<ul style="list-style-type: none"> <li>Weekly Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers)</li> <li>Visual Inspections of designated work areas to identify and address hazardous conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific Health and Safety Plan for new personnel.</li> <li>Behavior Based Loss Prevention Training (supervisors).</li> <li>1<sup>st</sup> Aid/CPR , 29CFR1910.120</li> </ul>



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**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Equipment Cleaning (Decontamination)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (Decontamination)	Manual Lifting	<ul style="list-style-type: none"> <li>JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, such that assigned work tasks/procedures maybe evaluated.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift— especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>Avoid carrying heavy objects above shoulder level.</li> </ul>	Modified Level DPPE * * Appropriate work clothes, hard hat, safety glasses and sturdy hard toed work boots, chemical/liquid resistant gloves, boots and suits, hearing protection and face shield as necessary for site hazards, evaluate the use of reflective safety vests to meet site conditions.
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet floors/stairs, unprotected holes, utilities, ground/floor protrusions and other uneven surfaces. Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices during all work.</li> </ul>	Modified Level DPPE *
	Noise	<ul style="list-style-type: none"> <li>Personnel exposed to loud working environments shall wear hearing protection.</li> </ul>	Modified Level DPPE *
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide and drink fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Modified Level DPPE * (light colored/wt. clothing)
	Fire Prevention	<ul style="list-style-type: none"> <li>Use only metal safety cans for storage and transfer of fuel.</li> <li>Secure/placarded Flammable Locker for flammable or combustible materials sotrage</li> <li>Appropriately sized, easily accessible ABC fire extinguisher in all work areas or heavy equipment.</li> <li>Review and be cognizant of any specific WNY Fire Prevention Procedures and Requirements prior to performing any hot work activities (hot cutting, welding, grinding).</li> </ul>	Modified Level DPPE *
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> <li>Do not enter poorly lit areas without first providing portable illumination.</li> <li>Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.</li> </ul>	Modified Level DPPE *
Equipment Cleaning (cont)	Vehicular Traffic	<ul style="list-style-type: none"> <li>Exercise caution when exiting to or working near areas with vehicle traffic. Park in a manner that will allow for safe exit from vehicle, and park vehicle so that it can serve as a barrier, if need be.</li> <li>If the potential exists for injury by vehicle impact in the work area, provide physical barriers between workers and traffic or warning mechanisms (flag personnel, look-out) for work area personnel</li> </ul>	Modified Level DPPE *



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Equipment Cleaning (Decontamination)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (Decontamination)  (cont)	Biological	<ul style="list-style-type: none"> <li>Observe areas for presence of stinging or biting or stinging insects and nests (spiders, bee/wasp hives etc.) Prior to performing work on-site, notify supervisors of known allergies to stinging insects and location/quantity of antidote in the event the employee becomes incapacitated as a result of an insect bite.</li> <li>Avoid exposure to bloodborne pathogens. Use universal precautions for protection from exposure to bloodborne pathogens.</li> <li>Contact with rabid dogs, cats or raccoons must be avoided. Contact animal control authorities if rabid animals are identified on site. Avoid contact with rats or pigeons or surfaces impacted by animal feces.</li> </ul>	Modified Level DPPE *
	Struck/pinched	<ul style="list-style-type: none"> <li>Wear reflective warning vests or high visibility clothing around haul truck/traffic or operating equipment. In indoor environments where operating equipment is not present, or where personnel are in close proximity to rotary action or other mechanical process equipment that vests could become caught in, the use of reflective vests must be evaluated.</li> <li>Isolate workers from operating trucks/equipment and fixed objects.</li> <li>Make/maintain eye contact with operators or haul drivers before approaching. Do not approach equipment/haul trucks from rear or from blind spot of operator/driver. Do not position yourself behind haul trucks or equipment.</li> <li>Do not step in front of or under materials being unloaded.</li> <li>Avoid positioning between fixed objects and operating equipment.</li> <li>Haul truck operators must be informed of designated haul routes. Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm. Haul trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots. Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the driver. Do not approach vehicle from the rear.</li> </ul>	Modified Level DPPE *
	Power & Hand Tools	<ul style="list-style-type: none"> <li>Do not set tools on/in mud, water, soil or other surfaces that could cause malfunction of tools.</li> <li>Tools inspected before use. Maintain all tools in a safe condition.</li> <li>Electric cords must be free from defects.</li> <li>All required guards shall be in place and functional.</li> <li>Hand held powered tools equipped with constant pressure switch.</li> <li>Electric power actuated tools double insulated and properly grounded.</li> <li>Hoses or cords shall not be used to lower or hoist tools.</li> <li>Tools disconnected from energy source when not in use.</li> <li>Only personnel qualified by training or experience to use power tools.</li> </ul>	Modified Level DPPE *



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Equipment Cleaning (Decontamination)**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Equipment Cleaning (Decontamination)  (cont)	Pressure Washing	<ul style="list-style-type: none"> <li>• Only trained, authorized personnel may operate the high-pressure washer.</li> <li>• Follow manufacturer’s safety and operating instructions.</li> <li>• Inspect pressure washer before use and confirm deadman switch fully operational</li> <li>• The wand must always be pointed at the work area.</li> <li>• The trigger should never be tied down</li> <li>• Never point the wand at yourself or another worker.</li> <li>• The wand must be at least 42 inches from the trigger to the tip.</li> <li>• The operator must maintain good footing.</li> <li>• Non-operators must remain a safe distance from the operator.</li> <li>• No unauthorized attachment may be made to the unit.</li> <li>• Do not modify the wand.</li> <li>• All leaks or malfunctioning equipment must be repaired immediately or the unit taken out-of-service.</li> </ul>	
	Electric Hazards	<ul style="list-style-type: none"> <li>• If/when electrical extension cords are required to complete work, extension cords must be: <ul style="list-style-type: none"> <li>- Equipped with third-wire grounding.</li> <li>- Covered, elevated, or protected from damage when passing through work areas.</li> <li>- Protected from pinching if routed through doorways.</li> <li>- Not fastened with staples, hung from nails, or suspended with wire.</li> <li>- Extension cords and electrical power tools, must have ground fault circuit interrupters (GFCIs) installed.</li> <li>- Rated to handle the voltage/amperage of equipment.</li> </ul> </li> </ul>	Modified Level D PPE *
	Chemical Exposure	<ul style="list-style-type: none"> <li>• Follow PPE and action level requirements identified in sections 5.0 and 6.0, respectively, of the site specific HSP and project directions regarding the same.</li> <li>• Do not allow dermal contact or incidental ingestion of impacted sediment, soil or liquid. Skin contact with impacted detritus shall be avoided at all times. Do not kneel or step in potentially impacted sediment, soil or liquid.</li> <li>• Exercise good hygiene practices. Always wash hands before eating, drinking, smoking and leaving site. Only eat, drink, smoke or chew tobacco in designated areas.</li> </ul>	Modified Level D PPE *



**JV II Task Order 017 – Site 1 Removal Action**  
**ACTIVITY HAZARD ANALYSIS – Equipment Cleaning (Decontamination)**

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment
Equipment Cleaning (cont)	Other	<ul style="list-style-type: none"> <li>Do not entry fractionation tank (confined space) during site demobilization operations (Permit Required Confined Space)</li> <li>Establish portable/temporary eye wash station and acquire first aid/bloodborne pathogen/CPR kit for project site</li> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Shut down operations in heavy rain and lightning when in outdoor work environments.</li> <li>Buddy System maintained for all phases of work.</li> <li>Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately</li> </ul>	NA
EQUIPMENT REQUIRED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> <li>Track excavator/skid steer/wheel loader</li> <li>Fire extinguisher(s)</li> <li>pressure washer</li> <li>Eye wash (small portable type)</li> <li>First Aid/Bloodborne pathogen/CPR kit</li> <li>Miscellaneous power and manual hand tools.</li> </ul>		<ul style="list-style-type: none"> <li>Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>Equipment inspections and maintenance.</li> <li>Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific HSP for new site personnel.</li> <li>Review operations/safety manuals for all equipment utilized.</li> <li>Behavior Based Loss Prevention Training (supervisors).</li> <li>Power tool use by personnel qualified via previous training or experience.</li> </ul>



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**JV II Task Order 017 – Site 1 Removal Action  
ACTIVITY HAZARD ANALYSIS – Demobilization**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Demobilization	Manual Lifting	<ul style="list-style-type: none"> <li>JV II or subcontract personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, such that assigned work tasks/procedures maybe evaluated.</li> <li>When lifting objects, lift using knees not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. If heavy equipment isn't available to have someone assist with the lift— especially for heavy (&gt; 50lbs.) or awkward loads. Use heavy equipment to transfer heavy or awkward loads wherever possible.</li> <li>Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift.</li> <li>Avoid carrying heavy objects above shoulder level.</li> </ul>	Standard Level D PPE * * Work clothes, reflective vests/ high visibility clothing, hard hat, safety glasses and sturdy hard toed work boots, hand and hearing protection, as dictated by task.
	Slips, Trips, Falls	<ul style="list-style-type: none"> <li>Be aware of poor footing, potential slipping/tripping hazards in the work area, such as wet floors/stairs, unprotected holes, utilities, ground/floor protrusions and other uneven surfaces. Use sturdy hard toe work boots with sufficient ankle support.</li> <li>Institute and maintain good housekeeping practices during all work.</li> </ul>	Standard Level D PPE*
	High Ambient Temperature	<ul style="list-style-type: none"> <li>Provide and drink fluids to prevent worker dehydration.</li> <li>Monitor for heat stress in accordance with HSP (maintain use of buddy system).</li> <li>Institute a proper work-break regiment to avoid heat stress symptoms and overexertion.</li> </ul>	Standard Level D PPE* (light colored/wt. clothing)
	Fire Prevention	<ul style="list-style-type: none"> <li>Use only metal safety cans for storage and transfer of fuel.</li> <li>Secure/placarded Flammable Locker for flammable or combustible materials storage</li> <li>Appropriately sized, easily accessible ABC fire extinguisher in all work areas or heavy equipment.</li> <li>Review and be cognizant of any specific NSFT Fire Prevention Procedures and Requirements prior to performing any hot work activities (hot cutting, welding, grinding).</li> <li>properly dispose of waste/spent materials.</li> </ul>	Standard Level D PPE*
	Heavy Equipment	<ul style="list-style-type: none"> <li>Seat belts or other restraint system shall be used by heavy equipment operators.</li> <li>Perform daily maintenance and inspections on operating equipment. Keep documentation on site.</li> <li>Use caution around pressurized lines/hoses. Inspect hoses daily for cuts, abrasions and wear.</li> <li>Equipment shall only be operated by personnel qualified by prior training or experience.</li> <li>Ensure that a stable ground surface is available for the operation of heavy equipment.</li> </ul>	Standard Level D PPE
	Visible Lighting	<ul style="list-style-type: none"> <li>Perform tasks in daylight hours whenever possible. If dawn, dusk or dark work is to be performed portable lighting must be provided to sufficient illuminate work area(s).</li> <li>Do not enter poorly lit areas without first providing portable illumination.</li> <li>Do not use non-explosion proof lighting in areas of flammable or combustible gases or liquids.</li> </ul>	Standard Level D PPE *
	Vehicular Traffic	<ul style="list-style-type: none"> <li>Exercise caution when exiting to or working near areas with vehicle traffic. Park in a manner that will allow for safe exit from vehicle, and park vehicle so that it can serve as a barrier, if need be.</li> <li>If the potential exists for injury by vehicle impact in the work area, provide physical barriers between workers and traffic or warning mechanisms (flag personnel, look-out) for work area personnel</li> </ul>	Standard Level D PPE *



**JV II Task Order 017 – Site 1 Removal Action  
ACTIVITY HAZARD ANALYSIS – Demobilization**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Demobilization (continued)	Biological	<ul style="list-style-type: none"> <li>Observe areas for presence of stinging or biting or stinging insects and nests (spiders, bee/wasp hives etc.) Prior to performing work on-site, notify supervisors of known allergies to stinging insects and location/quantity of antidote in the event the employee becomes incapacitated as a result of an insect bite.</li> <li>Avoid exposure to bloodborne pathogens. Use universal precautions for protection from exposure to bloodborne pathogens.</li> <li>Avoid contact with rodents.</li> </ul>	Standard Level D PPE*
	Struck/pinched	<ul style="list-style-type: none"> <li>Wear reflective warning vests or high visibility clothing around haul truck/traffic or operating equipment. In indoor environments where operating equipment is not present, or where personnel are in close proximity to rotary action or other mechanical process equipment that vests could become caught in, the use of reflective vests must be evaluated.</li> <li>Isolate workers from operating trucks/equipment and fixed objects.</li> <li>Make/maintain eye contact with operators or haul drivers before approaching. Do not approach equipment/haul trucks from rear or from blind spot of operator/driver. Do not position yourself behind haul trucks or equipment.</li> <li>Do not step in front of or under materials being unloaded.</li> <li>Avoid positioning between fixed objects and operating equipment.</li> <li>Haul truck operators must be informed of designated haul routes. Haul truck operators should ensure all persons are clear before operating trucks or equipment. Before moving, operators should sound horn or alarm. All equipment should be equipped with an operational backing alarm. Haul trucks or equipment with restricted visibility should be equipped with devices that eliminate blind spots. Employees should stay off haul roads. When approaching a haul area, employees should make eye contact and communicate their intentions directly with the driver. Do not approach vehicle from the rear.</li> </ul>	Standard Level D PPE*
	Power & Hand Tools	<ul style="list-style-type: none"> <li>Do not set tools on/in mud, water, soil or other surfaces that could cause malfunction of tools.</li> <li>Tools inspected before use. Maintain all tools in a safe condition.</li> <li>Electric cords must be free from defects.</li> <li>All required guards shall be in place and functional.</li> <li>Hand held powered tools equipped with constant pressure switch.</li> <li>Electric power actuated tools double insulated and properly grounded.</li> <li>Hoses or cords shall not be used to lower or hoist tools.</li> <li>Tools disconnected from energy source when not in use.</li> <li>Only personnel qualified by training or experience to use power tools.</li> </ul>	Standard Level D PPE *



**JV II Task Order 017 – Site 1 Removal Action  
ACTIVITY HAZARD ANALYSIS – Demobilization**

<b>Task Breakdown</b>	<b>Potential Hazards</b>	<b>Critical Safety Practices</b>	<b>Personal Protective Clothing and Equipment</b>
Demobilization (continued)	Other	<ul style="list-style-type: none"> <li>Do not entry fractionation tank (confined space) during site demobilization operations (Permit Required Confined Space)</li> <li>Establish portable/temporary eye wash station and acquire first aid/bloodborne pathogen/CPR kit for project site</li> <li>Always using a seat belt while driving on military/government facilities. Always observe posted speed limits, traffic signs and signals. Never using a cell phone or two way radio <u>while driving</u> on military/government facilities. Violating these rules may result in loss of military/government facility driving privileges.</li> <li>Shut down operations in heavy rain and lightning when in outdoor work environments.</li> <li>Buddy System maintained for all phases of work.</li> <li>Base Emergency Dispatch numbers programmed into cellular phones. Have hospital route maps readily available.</li> <li>Report all unsafe conditions and acts, injury/illness or property damage to supervisors immediately</li> </ul>	NA
<b>EQUIPMENT REQUIRED</b>		<b>INSPECTION REQUIREMENTS</b>	<b>TRAINING REQUIREMENTS</b>
<ul style="list-style-type: none"> <li>Track excavator/skid steer/wheel loader</li> <li>Fire extinguisher(s)</li> <li>Haul Vehicles</li> <li>Eye wash (small portable type)</li> <li>First Aid/Bloodborne pathogen/CPR kit</li> <li>Miscellaneous power and manual hand tools.</li> </ul>		<ul style="list-style-type: none"> <li>Visual Inspections of designated work areas identify and address hazardous conditions.</li> <li>Equipment inspections and maintenance.</li> <li>Inspections of hand tools (power) and extension chords if used.</li> </ul>	<ul style="list-style-type: none"> <li>Review AHA with all task personnel</li> <li>Review Site Specific HSP for new site personnel.</li> <li>Review operations/safety manuals for all equipment utilized.</li> <li>Behavior Based Loss Prevention Training (supervisors).</li> <li>Power tool use by personnel qualified via previous training or experience.</li> </ul>



PRINT

SIGNATURE

Supervisor Name:

\_\_\_\_\_

Date/Time: \_\_\_\_\_

\_\_\_\_\_

Safety Officer Name:

\_\_\_\_\_

Date/Time: \_\_\_\_\_

\_\_\_\_\_

Site Personnel:

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Date/Time: \_\_\_\_\_

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Date/Time: \_\_\_\_\_



## Attachment 11

### Pre-Task Safety Plan





**DAILY PRE-TASK SAFETY PLAN (PTSP)**

**Page 1 of 3**

Project: Task Order 17 Location: NSN Date: \_\_\_\_\_

Site Safety & Health Officer: \_\_\_\_\_ Job Activity: \_\_\_\_\_ Site #: 01

Task Personnel:

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List Tasks:

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Tools/Equipment/Materials required (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools, cords, generators, compressed gases, regulated chemical products, etc.):

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**Potential H&S Hazards, including chemical, physical, safety, biological and environmental (Check all that apply):**

<input type="checkbox"/> Chemical burns/contact	<input type="checkbox"/> Trench, excavations, cave-ins	<input type="checkbox"/> Ergonomics
<input type="checkbox"/> Pressurized lines/equipment	<input checked="" type="checkbox"/> Overexertion Work/break regiment as dictated by task. Maintain fluid intake for hydration	<input checked="" type="checkbox"/> Chemical splash Use PPE in accordance with HSP. Review Ozone hazard fact sheet. Protect hands from splash from sample preservatives.
<input checked="" type="checkbox"/> Thermal burns Solar. Use sun block on exposed skin.	<input checked="" type="checkbox"/> Pinch points Avoid pinch points from improper use of hand tools. Use tools for their intended function.	<input type="checkbox"/> Poisonous plants/insects
<input checked="" type="checkbox"/> Electrical GCFIs for generators, Inspect. & protect extension Chords, Chords rated for use & have 3 <sup>rd</sup> wire grounding	<input checked="" type="checkbox"/> Cuts/abrasions Do not use razor knives. Cut away from body. Identify and avoid rusty/jagged or sharp surfaces from above ground features (brush, pipe chases/supports, utility structures, doors)	<input checked="" type="checkbox"/> Eye hazards/flying projectile Use eye protection at all times.
<input type="checkbox"/> Weather conditions Foul and cold weather clothing as dictated by expected conditions	<input checked="" type="checkbox"/> Spills Use funnels & nozzles during fueling ops.	<input type="checkbox"/> Inhalation hazard
<input type="checkbox"/> Heights/fall > 6'	<input type="checkbox"/> Overhead Electrical hazards	<input checked="" type="checkbox"/> Heat/cold stress Work/break regiment as dictated by heat exposure Provide sufficient fluids for employee intake. Recommended employees begin with 16 oz. of water before initiating field work.
<input checked="" type="checkbox"/> Noise Use hear protection in loud work environments	<input checked="" type="checkbox"/> Elevated loads Do not walk under/in front of suspended loads.	<input type="checkbox"/> Water/drowning hazard
<input type="checkbox"/> Explosion/fire Charged/inspected fire extinguishers available in work area & equipment Metal safety cans for fuel storage, No open flame, sparks ignition in hazardous/flammable/ combustible storage areas	<input checked="" type="checkbox"/> Slips, trip and falls Exercise good general house keeping practices Identify/remove slip/trip falls hazards in work area.	<input type="checkbox"/> Heavy equipment
<input checked="" type="checkbox"/> Radiation Solar. UV protection on skin and UV eye protection. ANSI rated safety eye protection only.	<input checked="" type="checkbox"/> Manual lifting >50 lbs or awkward loads, get assistance. If employee not capable of lifting 50 lbs. seek assistance.	<input type="checkbox"/> Aerial lifts/platforms
<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Welding/cutting	<input type="checkbox"/> Demolition

**Continue on page 3 of 3 (if necessary)**



**Hazard Control Measures (Check all that apply):**

<b>PPE</b> <input type="checkbox"/> Thermal/lined <input checked="" type="checkbox"/> Eye <input type="checkbox"/> Dermal/hand <input type="checkbox"/> Hearing <input type="checkbox"/> Respiratory <input checked="" type="checkbox"/> Reflective vests <input type="checkbox"/> Flotation device	<b>Protective Systems</b> <input type="checkbox"/> Locate buried utilities <input type="checkbox"/> Competent person <input type="checkbox"/> Daily inspections <input type="checkbox"/> Sloping <input type="checkbox"/> Shoring <input type="checkbox"/> Trench box <input type="checkbox"/> Barricades	<b>Fire Protection</b> <input checked="" type="checkbox"/> Fire extinguishers <input type="checkbox"/> Fire watch <input type="checkbox"/> Non-spark tools <input type="checkbox"/> Grounding/bonding <input type="checkbox"/> Intrinsically safe equipment <input type="checkbox"/> Combustible materials storage <input type="checkbox"/> Chemical Storage	<b>Electrical</b> <input type="checkbox"/> Lockout/tagout <input checked="" type="checkbox"/> Grounded <input type="checkbox"/> Panels covered <input checked="" type="checkbox"/> GFCI/extension cords <input type="checkbox"/> Power tools/cord inspected <input type="checkbox"/> Insulated tools/gloves
<b>Fall Protection</b> <input type="checkbox"/> Harness/lanyards <input type="checkbox"/> Adequate anchorage <input type="checkbox"/> Guardrail system <input type="checkbox"/> Covered opening <input type="checkbox"/> Fixed barricades <input type="checkbox"/> Warning system	<b>Air Monitoring</b> <input type="checkbox"/> PID/FID <input type="checkbox"/> Detector tubes <input type="checkbox"/> Radiation <input type="checkbox"/> Personnel sampling <input type="checkbox"/> LEL/O2 <input type="checkbox"/> Other	<b>Proper Equipment</b> <input type="checkbox"/> Aerial lift/ladders/scaffolds <input type="checkbox"/> Forklift/ Heavy equipment <input type="checkbox"/> Backup alarms <input checked="" type="checkbox"/> Hand/power tools <input type="checkbox"/> Crane w/current inspection <input type="checkbox"/> Proper rigging <input type="checkbox"/> Operator qualified	<b>Welding &amp; Cutting</b> <input type="checkbox"/> Cylinders secured/capped <input type="checkbox"/> Cylinders separated/upright <input type="checkbox"/> Flash-back arrestors <input type="checkbox"/> No cylinders in CSE <input type="checkbox"/> Flame retardant clothing <input type="checkbox"/> Appropriate goggles
<b>Confined Space Entry</b> <input type="checkbox"/> Isolation <input type="checkbox"/> Air monitoring <input type="checkbox"/> Trained personnel <input type="checkbox"/> Permit completed <input type="checkbox"/> Rescue provisions	<b>Medical/Emerg. Response</b> <input checked="" type="checkbox"/> First-aid & BBP kit <input checked="" type="checkbox"/> Eye wash <input checked="" type="checkbox"/> FA-CPR training <input checked="" type="checkbox"/> Route to hospital	<b>Heat/Cold Stress</b> <input checked="" type="checkbox"/> Work/rest regime <input checked="" type="checkbox"/> Rest area <input checked="" type="checkbox"/> Liquids available <input checked="" type="checkbox"/> Monitoring <input checked="" type="checkbox"/> Training	<b>Vehicle/Traffic</b> <input checked="" type="checkbox"/> Traffic Awareness <input type="checkbox"/> Traffic control <input type="checkbox"/> Barricades <input type="checkbox"/> Flags <input type="checkbox"/> Signs
<b>Permits</b> <input type="checkbox"/> Hot work <input type="checkbox"/> Confined space <input type="checkbox"/> Lockout/tagout <input type="checkbox"/> Excavation <input type="checkbox"/> Demolition <input type="checkbox"/> Energized work <input type="checkbox"/> Local/Environmental	<b>Demolition</b> <input type="checkbox"/> Pre-demolition survey <input type="checkbox"/> Structure condition <input type="checkbox"/> Isolate area/utilities <input type="checkbox"/> Competent person <input type="checkbox"/> Hazmat present	<b>Inspections</b> <input type="checkbox"/> Ladders/aerial lifts <input type="checkbox"/> Lanyards/harness <input type="checkbox"/> Scaffolds <input type="checkbox"/> Heavy equipment <input type="checkbox"/> Cranes and rigging <input type="checkbox"/> Other per Field Safety Plan	<b>Training</b> <input checked="" type="checkbox"/> Hazwaste <input type="checkbox"/> Construction <input type="checkbox"/> Equipment <input type="checkbox"/> Competent person <input checked="" type="checkbox"/> Task-specific (AHA) <input checked="" type="checkbox"/> Hazcom

FieldNotes:

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Additional Space for Project Specific Hazard Awareness (if necessary):

- 1) Observe government/military facility posted speed limits.
- 2) Wear seat belts in equipment and vehicles while on government/military facilities. military facility access privileges.
- 3) Do not use cell phones or two way radios while driving or actively operating equipment on government/military facilities
- 4) Failure to do so may result in loss of driving privileges on government/military facilities
- 5) Report all accidents/injuries and property damage to the Project Manager and HSM immediately.
- 6) Maintain hospital route maps in site vehicles. Know facility EMS, Fire and Security dispatch #s.
- 7) Secure loads to hauling vehicle (pick-up truck) with appropriate rated tie down straps.
- 8) Use reflective vests/ high visibility clothing in high traffic areas or in areas were material handling operations are occurring

**Attendees:**

Name Printed:

Signature:

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Meeting Conducted By:

\_\_\_\_\_  
Name Printed

\_\_\_\_\_  
Signature



## Attachment 12

### Loss Prevention Observation (LPO) Form



Loss Prevention Observation Form			
Project:		Observer:	Date:
Position/Title of worker observed:		Background Information/ comments:	
Task/Observation Observed: _____			
<ul style="list-style-type: none"> <li>Identify and reinforce safe work practices/behaviors</li> <li>Identify and improve on at-risk practices/acts</li> <li>Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards</li> <li>Proactive PM/Site Manager support facilitates eliminating/reducing hazards (material/personnel resources)</li> <li>Positive, corrective, cooperative, collaborative feedback/recommendations</li> </ul>			
Actions & Behaviors	Consistent w/ H&S Program	Not Consistent w/ H&S Program	Observations/Comments
Current & accurate Pre-Task Planning/Briefing (Project safety plan, AHA, PTSP, tailgate briefing, c., as needed)			<b>Positive Work Practices Observed:</b>
Personnel properly trained/qualified/experienced			
Tools/equipment available and adequate			
Proper use of tools			<b>Questionable Activity/Condition Observed:</b>
Barricades/work zone control			
Housekeeping			
Communication			
Work Approach/Habits			
Attitude			
Focus/attentiveness			<b>Actions/Comments:</b>
Pace			
Uncomfortable/unsafe position			
Inconvenient/unsafe location			
Position/Line of fire			
Apparel (hair, loose clothing, jewelry)			
Repetitive motion			<b>Observed Worker's Corrective Actions/Comments:</b>
Other...			



**Attachment 13**  
**Incident Report Form**  
**Loss/Near Loss Incident Report Form**



# Root Cause Investigation

This attachment is provided to assist in accessing, completing, and reviewing an incident investigation. It is important to remember the following when conducting an investigation:

Gather relevant facts, focusing on fact-finding, not fault-finding.  
Draw conclusions, pitting facts together into a probable scenario.  
Determine incident root cause(s), the basic causes why an unsafe act/condition existed.  
Develop and implement solutions, matching all identified root causes with solutions.

## Documentation

The following should be included in the IRF to document the incident.

## Description

Provide a description of the event and the sequence of events and actions that took place prior to the incident. Start with the incident event and work backwards in time through all of the preceding events that directly contributed to the incident. The information should identify why the event took place as well as who was involved, when and where the event took place, and what actions were taken.

## Cause Analysis

Using the form and flowchart in this attachment the root cause of the incident will be determined. This form must be retained in the project and/or regional HS&E files.

**Immediate Causes**—List the substandard actions or conditions that directly affected the incident. The following are examples of immediate causes:

**Substandard Actions:** Operating equipment without authority; failure to warn; failure to secure; operating at improper speed; making safety device inoperable; using defective equipment; failing to use PPE; improper loading; improper lifting; improper position for task; under influence of alcohol or drugs; horseplay.

**Substandard Conditions:** Exposure to hazardous materials; exposure to extreme temperatures; improper lighting; improper ventilation; congestion; exposure to fire and explosive hazard; defective tools, equipment or materials; exposure to extreme noise; poor ventilation; poor visibility; poor housekeeping.

**Basic Causes**—List the personal and job factors that caused the incident. The following are examples of basic causes:

**Personal Factors:** Capability; knowledge; skill; stress; motivation.

**Job Factors:** Abuse or misuse; engineering; maintenance; purchasing; supervision; tools and equipment; wear and tear; work standards.

## Corrective Action Plan

Include all corrective actions taken or those that should be taken to prevent recurrence of the incident. Include the specific actions to be taken, the employer and personnel responsible for implementing the actions, and a time frame for completion. Be sure the corrective actions address the causes. For example, training may prevent recurrence of an incident caused by a lack of knowledge, but it may not help an incident caused by improper motivation.

The following are examples of management programs that may be used to control future incidents. These programs should be considered when determining specific corrective actions.

**Management Programs:** Accident/incident analysis; emergency preparedness; engineering controls; general promotion; group meetings; health control; hiring and placement; leadership and administration; management training; organizational rules; personal protective equipment; planned inspections; program audits; program controls; purchasing controls; task analysis and procedures; task observation.



## **Loss/Near-Loss Investigation Report Form**

### **Employer Information**

Company Name: \_\_\_\_\_

Project Name: \_\_\_\_\_ Task Order: \_\_\_\_\_

Project Location: \_\_\_\_\_

Task Location: \_\_\_\_\_

Job Assignment: \_\_\_\_\_

Preparer's Name: \_\_\_\_\_ Preparer's Employee Number: \_\_\_\_\_

### **Incident Specific Information**

Date of Incident: \_\_\_\_\_ Time of Incident: \_\_\_\_\_ a.m./p.m.

Location of incident:

☐ Company premises

☐ Field

☐ In Transit

☐

Other: \_\_\_\_\_

Address where the incident occurred: \_\_\_\_\_

Equipment Malfunction : Yes ☐ No ☐

Activity was a Routine Task: Yes ☐ No ☐

Describe any property damage: \_\_\_\_\_

Specific activity the employee was engaged in when the incident occurred:

\_\_\_\_\_  
\_\_\_\_\_

All equipment, materials, or chemicals the employee was using when the incident occurred:

\_\_\_\_\_  
\_\_\_\_\_

Describe the specific incident and how it occurred:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Describe how this incident may have been prevented:

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Contributing Factors (Describe in detail why incident occurred):

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Date employer notified of incident: \_\_\_\_\_ To whom reported:

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**Witness Information (First Witness)**

Name: \_\_\_\_\_  
Employee Number \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code : \_\_\_\_\_  
Phone: \_\_\_\_\_

**Witness Information (Second Witness)**

Name: \_\_\_\_\_  
Employee Number \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Zip Code : \_\_\_\_\_  
Phone: \_\_\_\_\_

Additional information or  
comments: \_\_\_\_\_

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**A ROOT CAUSE ANALYSIS FORM MUST BE COMPLETED FOR ALL INJURIES AND ILLNESSES OR ACTUAL LOSSES.**

**COMPLETION OF THE ROOT CAUSE ANALYSIS FORM FOR NEAR LOSSES IS OPTIONAL, AT THE DISCRETION OF THE HEALTH AND SAFETY MAANGER.**



## Determination of Root Cause(s)

For losses or near losses the information may be gathered by the supervisor or other personnel immediately following the loss or near loss. Based on the complexity of the situation, this information may be all that is necessary to enable the investigation team to analyze the loss, to determine the root cause, and to develop recommendations. More complex situations may require the investigation team to revisit the loss site or re-interview key witnesses to obtain answers to questions that may arise during the investigation process.

Photographs or videotapes of the scene and damaged equipment should be taken from all sides and from various distances. This point is especially important when the investigation team will not be able to review the loss scene.

The investigation team must use the Root Cause Analysis Flow Chart to assist in identifying the root cause(s) of a loss. Any loss may have one or more "root causes" and "contributing factors". The "root cause" is the primary or immediate cause of the incident, while a "contributing factor" is a condition or event that contributes to the incident happening, but is not the primary cause of the incident. Root causes and contributing factors that relate to the *person* involved in the loss, his or her peers, or the supervisor should be referred to as "personal factors". Causes that pertain to the *system* within which the loss or injury occurred should be referred to as "job factors".

### Personal Factors

1. Lack of skill or knowledge, lack of motivation
5. Correct way takes more time and/or requires more effort
6. Short-cutting standard procedures is positively reinforced or tolerated
7. Person thinks that there is no personal benefit to always doing the job according to standards

### Job Factors

2. Lack of or inadequate operational procedures or work standards.
3. Inadequate communication of expectations regarding procedures or standards
4. Inadequate tools or equipment

### Other

#### 8. Uncontrollable Factors \*

The root cause(s) could be any one or a combination of these seven possibilities or some other "uncontrollable factor". In the vast majority of losses, the root cause is very much related to one or more of these seven factors. \* **Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.**



# Root Cause Analysis Form

## Root Cause Analysis (RCA)

Root Cause Categories (RCC): Select the RCC numbered below that applies for the root cause (RC) and/or contributing factor (CF) in the first column, then describe the specific root cause and corrective actions in each column.

1. Lack of skill or knowledge
2. Lack of or inadequate operational procedures or work standards
3. Inadequate communication of expectations regarding procedures or work standards
4. Inadequate tools or equipment
5. Correct way takes more time and/or requires more effort
6. Short-cutting standard procedures is positively reinforced or tolerated
7. Person thinks there is no personal benefit to always doing the job according to standards
8. Uncontrollable Factor (Note: Uncontrollable factors should be used rarely and only after a thorough review eliminates "all" seven other factors.)

RCC #	Root Cause(s)	Corrective Actions	RC <sup>1</sup>	CF <sup>2</sup>	Due Date	Completion Date	Date Verified

<sup>1</sup> RC = Root Cause; <sup>2</sup> CF = Contributing Factors (check which applies)

## Investigation Team Members

Name	Job Title	Date

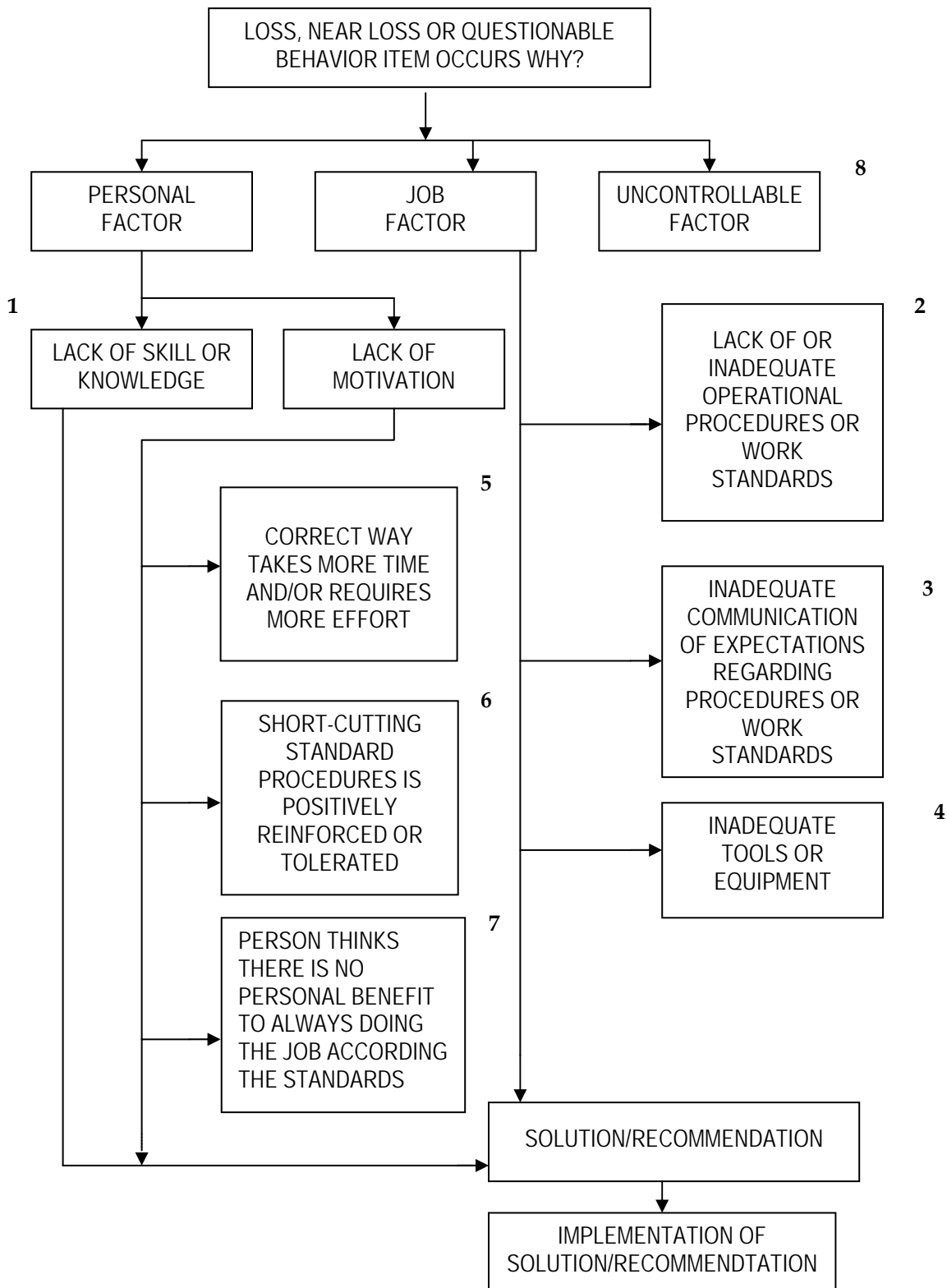
## Results of Solution Verification and Validation


## Reviewed By

Name	Job Title	Date



## Root Cause Analysis Flow Chart





## Attachment 14

### Emergency Contact List



# Emergency Contact List

**CH2MHILL 24-hour Nurse Number 1-800-756-1130**

(See attached instructions \*)

## Medical Emergency 911

## Fire/Spill Emergency 911

## Security Emergency 911

See site Specific Hospital Route Maps for emergency contact information.

**On NSN Medical, Fire or Security Dispatch#**  
(757) 462 4444

## Utilities Emergency/POC #s

Sheldon Johnson (ROICC) M – F, 8 am – 4 pm  
757 322 4128

## CH2M HILL- Medical Consultant

Dr. Jerry H. Berke, M.D., M.P.H.

Health Resources

600 West Cummings Park, Suite 3400

Woburn, MA 01801-6350

781/938-4653

800/350-4511

(After hours calls will be returned within 20 minutes)

CH2MHILL Injury Management #:1-800-756-1130.

## AGVIQ Medical Consultant(s)

Refer to AQVIQ VBO office for a detailed list of Medical Facilities/contacts.

## JV II Program Director

Name: Craig Miller AGVIQ

Phone: 757-318-9420 x25/ 757- 531- 6425 (cell)

## JV II Project Manager (overall)

Name: Stephen Matney AGVIQ

Phone: 757-318-9420 x17/ 757- 544- 2632 (cell)

## JV II Deputy Program Manager

Name: Name: Michael Halil CH2M HILL – (JXO)

Phone: 904-777-4812 x 233/904-219-6277 (cell)

## JV II Project Engineer

Name: Ed Corack/CH2M HILL - VBO

Phone: 757-671-6215

## AGVIQ Corporate Human Resources Department

Name: Kristy Payne

TIKIGAQ Corp. Anchorage, AK

Phone: (907) 365 6242

## CH2M HILL Corporate Human Resources Department

Name: Pete Hannon, DEN

Phone: 303-771-0900

## JV II Site Superintendent

Name: Rob Lychalk

Cell Phone: 757-544-0524 (cell)

## JV II SHSO

Name: Katthy Jewell

Cell Phone: 216-534-1048 (cell)

## JV II HSM

Name: Richard Rathnow – CH2M HILL -ORO

Phone: (865) 483 9005 (572)

Cell: (865) 607 6734

## JV II HSO/POC (SHSO alternate)

Name: Glen Jackson - AGVIQ

Cell Phone: (757) 644 8293

(757) 318 9420 X 12

## AGVIQ Worker's Compensation & Auto Claims

Name: Kristy Payne

TIKIGAQ Corp. Anchorage, AK

Phone: (907) 365 6242

AGVIQ personnel to report all accidents or injuries to AGVIQ Corporate HSM or HSO immediately but no later than 24 hrs. Fatalities and hospitalizations shall require immediate notification to AGVIQ Corporate HSM.

## CH2MHill Worker's Compensation & Auto Claims

Sterling Administration Services

Phone: 800/420-8926 After hours: 800/497-4566

Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

Fatalities and hospitalizations shall require immediate notification to JVI HSM.

## AGVIQ Corporate HSM

Name: Troy Izatt –

Office phone # (907) 365-6182

Cell phone # (907) 748-3697

## Federal Express Dangerous Goods Shipping

Phone: 800/238-5355

**Emergency Number for Shipping Dangerous Goods** Phone: 800/255-3924

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

**Facility Alarms:** Sound vehicle horn three times

## Evacuation Assembly Area(s):

Site trailer. Account for all team members.

**Facility/Site Evacuation Route(s):** Developed site specific on-site prior to start of work

**Hospital Name/Address:** See site Specific Hospital Route Maps for emergency contact information.



## \* Emergency Nurse Assistance Instructions (CH2MHILL personnel only)

- After informing their supervisor (JV II Project Manager and/or Deputy Program Manager), the injured employee calls CH2M HILL's contracted Occupational Nurse.

### ***24-hour CH2M HILL Emergency Nurse Assistance***

***1-800-756-1130***

- The Occupational Injury Nurse listens to the injured employee to understand the injury/illness.
- Employee is provided guidance on appropriate treatment options (triage).
- If instructed to visit a medical facility by the Occupational Nurse, the Supervisor is responsible for instructing the injured employee to take a copy of the **CH2M HILL Initial Medical Treatment Form (Attachment # 14 – For Use by CH2MHILL Personnel Only)** with them to the physician, clinic or hospital.
- Appropriate treatment details are handled by the Occupational Injury Nurse, and Workers Compensation Groups.
- Nurse communicates and troubleshoots with and for employee through full recovery
- Upon any project incident (fire, spill, injury, near miss, death, etc.), immediately notify the JV II PM and JV II HSM. Call emergency beeper number if HSM is unavailable.
- For work-related injuries or illnesses to CH2MHILL personnel, contact and help Human Resources administrator complete an Incident Report Form (IRF). IRF must be completed within 24 hours of incident.

For JV II subcontractor incidents, complete the Incident Report Form (IRF), Near Loss Investigation Report and Root Cause Analysis and submit to the JV II PM and HSM.



*To be completed by CH2M HILL Supervisor – Send with employee visiting medical facility or forward within 24 hours.*

Employee name: \_\_\_\_\_ Date of  
Injury: \_\_\_\_\_  
Supervisor: \_\_\_\_\_ HS  
Representative: \_\_\_\_\_  
Visit Authorized by: \_\_\_\_\_ Phone #: \_\_\_\_\_

CH2M HILL Workers Compensation Administrator: Cambridge  
Send Bills to: CH2M HILL  
Attn: Jennifer Rindahl  
P.O. Box 22508  
Denver, Colorado 80222-0508

*To be completed by medical provider:*

Physician's name: \_\_\_\_\_ Phone #: \_\_\_\_\_  
Address: \_\_\_\_\_  
CH2M HILL employee: \_\_\_\_\_ has been treated for: \_\_\_\_\_

**It is the policy of CH2M HILL to provide temporary modified duty whenever possible for employees with physical restrictions resulting from an occupational injury or illness.**

Released to full duty

Released to restricted duty only (list restrictions below)

Out of work until \_\_\_\_\_ (date)

Please list any physical restrictions:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Expected duration of restricted duty?

\_\_\_\_\_

**CH2M HILL would like the best and most efficient care extended to all our employees. Please recommend over-the-counter (OTC) medication as a suitable alternative when medically feasible.**

Prescribed  
medication: \_\_\_\_\_

Recommended OTC alternative: \_\_\_\_\_

Date of follow-up appointment: \_\_\_\_\_

Physician's signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please return this form to the injured employee and FAX to Health Resources at 1-800-853-2641. If you want to discuss the employee's work restrictions, please call the person listed in the "Visit Authorized by" field.



## Attachment 15

### Site Specific Accident Prevention Plan



# Accident Prevention Plan

Removal Action  
Site 1, Bousch Creek,  
Naval Station Norfolk  
Norfolk, Virginia

Contract No N62467-03-D-0260  
Contract Task Order 017

Prepared for:



Department of the Navy  
Naval Facilities Engineering Command  
Washington Division

Prepared by:



August 2007

revision1, November 2007



# Contents

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<b>1.0</b>	<b>Signature Sheets .....</b>	<b>1-1</b>
<b>2.0</b>	<b>Background Information.....</b>	<b>2-1</b>
<b>3.0</b>	<b>Statement of Safety and Health Policy.....</b>	<b>3-1</b>
3.1	Objective .....	3-1
3.2	Purpose .....	3-1
3.3	Primary Environmental Health and Safety Program Functions.....	3-1
3.4	Safety Organization and Responsibility .....	3-1
3.5	Regulator Compliance Policy .....	3-3
3.6	Safety Goals .....	3-3
3.7	Safety Training.....	3-4
3.8	Medical Surveillance .....	3-4
3.9	Accident Investigation.....	3-4
3.10	Position Statement on Modified Work .....	3-4
3.11	Field Safety Inspections .....	3-5
3.12	First Aid .....	3-5
3.13	Review of Health and Safety Statistics .....	3-5
3.14	Specific Written Safety Procedures/Permits .....	3-5
3.15	State, OSHA, and Other Regulations.....	3-6
3.16	Changes.....	3-6
<b>4.0</b>	<b>Responsibilities and Lines of Authorities.....</b>	<b>4-1</b>
<b>5.0</b>	<b>Subcontractors and Suppliers .....</b>	<b>5-1</b>
5.1	Subcontractor/Supplier Coordination and Control.....	5-1
5.2	Subcontractor/Supplier Safety Responsibilities .....	5-1
<b>6.0</b>	<b>Training.....</b>	<b>6-1</b>
6.1	Safety Indoctrination Subjects .....	6-1
6.2	Mandatory Training and Certifications .....	6-1
6.3	Supervisory and Employee Safety Meetings.....	6-1
<b>7.0</b>	<b>Safety and Health Inspections .....</b>	<b>7-1</b>
<b>8.0</b>	<b>Safety and Health Expectations, Incentive Programs, and Compliance .....</b>	<b>8-1</b>
8.1	Company Safety Program Goals .....	8-1
8.2	JV II Employee Safety Responsibility Requirements.....	8-1
8.3	Managers and Supervisors Safety Accountability.....	8-1
<b>9.0</b>	<b>Accident Reporting .....</b>	<b>9-1</b>
9.1	Exposure Data (Man-hours Worked) .....	9-1
9.2	Accident Investigations, Reports, and Logs .....	9-1
9.3	Immediate Notification of Major Incidents .....	9-1
<b>10.0</b>	<b>Medical Support .....</b>	<b>10-1</b>
<b>11.0</b>	<b>Personal Protective Equipment.....</b>	<b>11-1</b>
<b>12.0</b>	<b>Plans Required by the Safety Manual.....</b>	<b>12-1</b>
12.1	Hazard Communication Program .....	12-1
12.2	Emergency Response Plans.....	12-1
12.3	Layout Plans.....	12-1



12.4	Respiratory Protection Plan .....	12-1
12.5	Lead Abatement Plan.....	12-1
12.6	Asbestos Abatement Plan.....	12-1
12.7	Abrasive Blasting.....	12-2
12.8	Confined Space .....	12-2
12.9	Hazardous Energy Control Plan .....	12-2
12.10	Critical Lift Procedures .....	12-4
12.11	Contingency Plan for Severe Weather.....	12-4
12.12	Access and Haul Road Plan .....	12-4
12.13	Demolition Plan.....	12-4
12.14	Emergency Rescue (Tunneling).....	12-4
12.15	Underground Construction Fire Prevention and Protection Plan .....	12-4
12.16	Compressed Air Plan.....	12-5
12.17	Form Work and Shoring Erection and Removal Plans .....	12-5
12.18	Lift Slab Plans.....	12-5
12.19	Health and Safety Plan .....	12-5
12.20	Blasting Plan.....	12-5
12.21	Diving Plan.....	12-5
12.22	Alcohol and Drug Abuse Prevention Plan .....	12-5
<b>13.0</b>	<b>Contractor Information to Meet the Requirements of the Major Sections of</b>	
<b>EM-385-1-1.....</b>		<b>13-1</b>



# Acronyms and Abbreviations

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ANSI	American National Standards Institute
APP	Accident Prevention Plan
ASTM	American Society for testing and Materials
CFR	Code of Federal Regulation
CIH	Certified Industrial Hygienist
CPR	cardiopulmonary resuscitation
EMT	emergency medical technician
OM	Corporate Operations Manager
EH&S	Environmental Health and Safety
HSM	JV II Health and Safety Manager
HSP	Health and Safety Plan
JV II	AGVIQ-CH2M HILL Joint Venture I
NIOSH	National Institute for Occupational Health
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
ROICC	Resident Officer in Charge of Construction
SHSO	Site Health and Safety Officer
TBD	to be determined



# 1.0 Signature Sheets

---

## **Plan Acknowledged By:**

Name: Craig Miller  
Title: JV II Program Manager  
Company: AGVIQ-CH2M HILL Joint Venture II (JV II)  
Telephone: 757-318-9420 x19  
Fax: 757-318-9421

I hereby acknowledge that I have reviewed and fully understand the tenets of this Accident Prevention Plan and my responsibilities as they are specified herein.

Signature: \_\_\_\_\_  
Craig Miller, Program Manager

## **Designated JV II Project Manager (overall):**

Name: Stephen Matney  
Title: Project Manager  
Company: AGVIQ-CH2M HILL Joint Venture II  
Telephone: 757 318 9420 x25  
Fax: 757 318 9421

I hereby acknowledge that I have reviewed and fully understand the tenets of this Accident Prevention Plan and my responsibilities as they are specified herein.

Signature: \_\_\_\_\_  
Stephen Matney, Project Manger

## **Designated JV II Site Health & Safety Officer:**

Name: KathyJewell  
Title: Site Health and Safety Officer  
Company: AGVIQ-CH2M HILL Joint Venture II  
Telephone: 216 534 1048  
Fax: 757-318-9421

I hereby acknowledge that I have reviewed and fully understand the tenets of this Accident Prevention Plan and my responsibilities as they are specified herein.

Signature: \_\_\_\_\_  
Kathy Jewell, Environmental Scientist/SHSO



## 2.0 Background Information

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Background information for this project is detailed in the Health and Safety Plan (HSP), Section 1.0 through 1.5.



## 3.0 Statement of Safety and Health Policy

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### 3.1 Objective

To provide a Safe Work Place for all employees by developing and administering an overall Environmental Health and Safety (EH&S) Program. To establish written policies and procedures that serve as vehicles through which the program will be implemented.

### 3.2 Purpose

This statement describes the AGVIQ-CH2M HILL Joint Venture II (JV II) Health and Safety (H&S) Program and the responsibilities of the supervisors, employees, and subcontractors. It will address applicable United States Occupational Safety and Health Administration (OSHA) standards set forth in 29 CFR 1910 and 29 CFR 1926 as well as various consensus standards and JV I policies by the use of referenced procedures.

### 3.3 Primary Environmental Health and Safety Program Functions

The primary functions of the Environmental H&S program are to:

- Define the health and safety responsibilities of JV II personnel.
- Administer the medical surveillance program.
- Prepare the site safety plans.
- Provide safety training/maintaining training records.
- Provide safety procedures and protocols to be used at project sites, shops, and offices.
- Conduct accident investigations and maintaining records.
- Verify OSHA compliance under 29 CFR 1910 and 1926.
- Provide guidance and assistance with preparation of safety protocols for specific tasks.
- Promote safety and health consciousness within the company.
- Designate the functional organization of safety committees to serve corporate and project specific safety and health program needs.

### 3.4 Safety Organization and Responsibility

With JV II, the safety and protection of employees, clients, and the community is the first priority. This concern for safety is not restricted to field operations but extends to



laboratories, the offices, and shop facilities. If an activity or condition is unsafe, the task will not proceed until the situation is corrected.

The **Program Manager** is the primary operational safety official of JV II and has overall responsibility for ensuring that program participants adhere to the H&S policies and procedures adopted by the JV II program.

The **Health and Safety Manager (HSM)** administers the safety program for the JV II program and reports directly to the Program Manager with regard to JV II program matters. The HSM, or his designee, is responsible to support and assist program staff in executing the EH&S policies and procedures adopted by the program for implementation. The HSM also maintains secondary reporting to the Deputy Program Manager.

The **Site Health and Safety Officer (SHSO)** is responsible for administration and enforcement of the safety procedures and protocols on project sites. The SHSO is the primary safety official at the working level. The responsibility for safety is delegated and shared by project managers, alternate site safety officers, and subcontractors' supervisors. At a minimum, the SHSO must perform, or otherwise supervise the performance of, the following:

- Motivate employees and supervisors of subcontractors to adhere to JV II's safety policy in each work situation.
- Schedule, organize, and lead preparatory phase meetings prior to all activities relevant to definable features of work and have a working knowledge of the safe procedure for all jobs and tasks under their supervision. When in doubt, seek assistance prior to initiating a task. This is the only acceptable manner in which to perform the task. If the task cannot be accomplished safely, it will not be attempted.
- Explain the safety procedure involved with a task to each employee and check frequently to see that the employee understands and works as instructed.
- Allocate sufficient time for the training and coaching of all employees to insure that everyone knows the correct procedure for safely accomplishing required tasks. New employees will not be allowed to perform any work until required training is completed.
- Immediately correct unsafe conditions that involve JV II employees or subcontractors.
- Ensure that employees are outfitted with and wear personal protective equipment as specified by this plan, EM385-1-1, and other JV II procedures.
- Set a good safety example.
- Obtain the cooperation of employees and sub-contractors. Sub-contractor safety performance records will be verified prior to contract award and will be continually monitored during operations.
- Report all accidents, near misses and property damage in accordance with the Incident Management and Reporting Procedure.

**Every Employee**, regardless of job title, shares the responsibility for safety and should report any unsafe work condition without fear of reprisal. It is imperative that employees



observe the following minimum requirements in order to achieve a safe and healthy workplace:

- Each employee must be familiar with this Accident Prevention Plan and the general safety rules herein.
- Each employee will practice safe procedures and follow all safety rules and regulations for the successful completion of any job task.
- All employees will wear the necessary personal protective equipment required for the job or task as specified by this plan, EM385-1-1, and other JV II procedures.
- The employee will notify the immediate supervisor of any potential hazard or unsafe work practice that could result in injury or destruction of property.
- The employee will report all accidents to an immediate supervisor regardless of whether injury or property damage resulted. This includes all near misses (accidents without injury or damage). This requirement serves to bring unsafe conditions to the attention of management.
- Each employee will be subject to contraband search for safety purposes and for the safety of fellow employees.
- Violations of published safety policies and procedures may be cause for disciplinary actions up to and including dismissal.
- All employees who are taking prescribed medications that could affect work performance or might alter the manner in which they could be treated in an emergency will so advise their supervisor prior to beginning work.

### 3.5 Regulator Compliance Policy

The policy of JV II will be to comply with all federal, state, local, and client regulations. It is the responsibility of all personnel to perform all work in full compliance with appropriate regulations. Safety and health personnel will immediately bring any condition regarding safety and health compliance to the attention of supervisory operating personnel.

JV II will endeavor to ensure regulatory compliance by all of its subcontractors, including, safety records, OSHA training, and medical surveillance, as applicable.

### 3.6 Safety Goals

The goal of the safety and health program is to ensure a safe working environment, protect workers from harm, and protect the company from liability associated with an unsafe working environment.

Other goals are to eliminate workplace accidents, gain worker acceptance through cooperation and training, and provide our clients with a responsible, well-trained, safety-oriented work force.



JV II has adopted a “zero accidents” goal for all operations. All activities will be planned and performed with this goal foremost.

### **3.7 Safety Training**

JV II engages in environmental remediation, construction, and other services, and must comply with numerous health and safety training requirements, mandated by governmental agencies, clients, and internal policies.

All personnel will be provided sufficient training to execute their jobs in a safe and healthy manner.

Direct supervisors are responsible to determine the training requirements of a task and ensure employees have the necessary training to complete the task safely. EH&S personnel will assist with this determination and training.

The corporate personnel department will maintain training records and documentation.

### **3.8 Medical Surveillance**

All employees who perform work at hazardous waste sites or perform emergency response will be subject to the JV II medical surveillance program. This program conforms to the requirements established by 29 CFR 1910.120/1926.65 (f) Medical surveillance and is titled EH&S Procedure 3-1, Occupational Health Examination Program.

### **3.9 Accident Investigation**

All accidents, injuries, illnesses, incidences of significant property damage will be investigated by the SHSO or other authorized H&S program designate. Upon completion of such investigations, completed investigation reports shall be provided to the JV Project Manager for review and circulation to JV II program stakeholders (HSM, Program/Deputy Program Manager, other JV II designated stakeholder interests).

The JV II HSM may investigate serious accidents, such as those involving hospitalization or injuries requiring more than one visit to a physician. The JV II HSM may also request that a specific written accident investigation be conducted in case of an unusual or serious injury or accident.

### **3.10 Position Statement on Modified Work**

JV II will attempt to eliminate all accidents through strict compliance with OSHA regulations and JV II H&S procedures, as well as supervisor and employee safety training, safety audits, and constant attention to safety. Should employee be injured or become ill in the course of and arising from his employment, JV II will attempt to provide modified work. Modified work (“light duty”) will be made available in order to bring the injured employee back to the work environment, for the benefit of the employee and the company, whenever medically appropriate.



Employees are expected to return to modified work when medically capable. The work assigned to the injured employee will meet the restrictions set forth by the treating and/or company physician. Examples of modified work include but are not limited to office work, dispatching, and light shop work.

### **3.11 Field Safety Inspections**

Weekly safety inspections will be made of the work area. The inspection will be made by the Site Superintendent/Supervisor, Field Team Lead, (herein after as individual responsible for site operations) and/or the SHSO, or other designated JV II representative. These inspections are in addition to the daily inspections to be held by these individuals and designated crew leaders. Discrepancies found during inspections will be corrected as soon as practicable. Serious safety violations will be corrected immediately. Inspection records will be maintained in the safety log.

Additionally, the JV II HSM or designated representative may make periodic unannounced inspections of work sites on their own discretion or at the request of an employee, supervisor, manager, or client.

### **3.12 First Aid**

Each facility and work location must be evaluated to determine the potential requirement for medical emergencies. At a minimum, an industrial first-aid kit will be provided. An adequate number of employees with current certification in first aid and cardiopulmonary resuscitation (CPR) will be maintained on the project sites.

The SHSO will ensure that emergency medical attention is readily available. For emergency response and remediation operations, the SHSO will establish the requirement for medical emergency response and identify an emergency medical facility with chemical contamination trauma capability. If site conditions require, a subcontract emergency medical technician (EMT) and/or the availability of ambulance service on site will be implemented.

### **3.13 Review of Health and Safety Statistics**

A designated representative from JV II will review and tabulate safety statistics as necessary:

- OSHA 300 form
- Workers' Compensation Experience Modification Ratings

### **3.14 Specific Written Safety Procedures/Permits**

In order to provide a safe work place and communicate specific work requirements for regulatory compliance, specific tasks are incorporated by reference to this procedure. These procedures deal with specific areas such as confined space, hot work, lock out tag out, etc.



All JV II personnel who may be subject to these procedures will receive appropriate training and will be held accountable for compliance with procedure requirements.

### **3.15 State, OSHA, and Other Regulations**

Where state regulations differ from federal regulation cited in this plan, the more stringent regulation will apply.

### **3.16 Changes**

Any user of this plan is welcome to recommend changes. Changes normally result from finding errors, regulatory changes, equipment modification, new equipment purchases, and changes to operation procedures or site conditions. The format for making a recommended change is:

Submit a written recommendation to the JV II HSM via your immediate supervisor. The JV II HSM will review the recommendation.

After review, the JV II HSM will determine if the suggestions should be included as an amendment or new procedure in this plan. Changes to this plan will be distributed immediately upon approval.



## 4.0 Responsibilities and Lines of Authorities

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The following listed JV II personnel will have the authority to intervene and suspend work in the interest of safety policy compliance:

- Craig Miller                      JV II Program Manager
- Micheal Halil                    JV II Deputy Program Manager
- Stephen Matney                JV II Project Manager (overall)
- Richard Rathnow                JV II HSM
- Rob Lychalk                    JV II Site Superintendent
- Kathy Jewell                    JV II SHSO

Safety responsibilities, accountability and lines of authority are further discussed in Section 2.2 of the HSP, Project Safety Responsibilities.



## 5.0 Subcontractors and Suppliers

---

### 5.1 Subcontractor/Supplier Coordination and Control

JV II subcontractors will be screened for safety performance and compliance with federal alcohol and drug testing requirements prior to being issued any contract for site work. JV II subcontractors will comply with the requirements for site safety as outlined in JV II health and Safety Procedures.

### 5.2 Subcontractor/Supplier Safety Responsibilities

All subcontractor employees are subject to the same training and medical surveillance requirements as JV II personnel depending on job activity. All activities involving the potential for exposure to hazardous waste materials will require medical and training certification as mandated by 29 CFR 1910.120. All subcontractor personnel will be required to sign in daily and be required to attend a daily meeting discussing operations and safety issues. All subcontractors involved in construction/remedial activities will complete a Subcontractor Pre-Job Safety Checklist prior to the start of work at the site. Subcontractors will submit Activity Analyses for their work activities to the JV II SHSO or HSM for review. The subcontractor reports directly to the JV II Project Manager (overall), herein referred to as Project Manager. The JV II Project Manager may designate subcontractor reportability to the JV II individual responsible for site operations. All incidents involving subcontractor employees will be reported to the JV II individual responsible for site operations and a copy of the subcontractor's injury/illness report will be submitted to the JV II Project Manager and HSM, as soon as possible, but no later than 24 hours.

JV II subcontractors are required to sign off and comply with all requirements of the JV II Site-Specific HSP, which includes this Accident Prevention Plan (APP). Plans to address specific hazards may be added to the APP by during the course of work. JV II subcontractors will be required to sign off and comply with any such supplemental plans. Subcontractors not in compliance will be immediately dismissed from the site.

Suppliers delivering various materials to the project site or providing equipment and equipment maintenance will comply with all rules and regulations specified by the owner. Supplier personnel will not be permitted into contaminated areas unless training and medical surveillance is in accordance with 29 CFR 1910.120. Contractors will not ride on tractors, forklifts or similar vehicles unless specific seats are provided. They will follow Facility hot work rules if hot work is required for vehicle or equipment maintenance. Trucks will be loaded and unloaded in a safe and effective manner and materials will be stored safely in designated locations only. Associated packaging will be properly disposed of and litter will not be permitted to be scattered or blown from truck beds. Operators of mobile equipment on site must observe all traffic rules such as speed limits and right-of-ways of pedestrians.



## 6.0 Training

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### 6.1 Safety Indoctrination Subjects

Outlines of the site safety orientation for JV II and subcontractor personnel and visitors are provided in Section 2.1 of the HSP, Employee Medical Surveillance and Training.

### 6.2 Mandatory Training and Certifications

Mandatory training and certifications are discussed in Section 9.0 of the HSP, Training Requirements.

All personnel entering an exclusion zone will be trained in the provisions of this Accident Prevention Plan and be required to sign the Accident Prevention Plan. Site-specific training for the assigned Task Orders are included in Section 2.1, Employee Medical Surveillance and Training.

### 6.3 Supervisory and Employee Safety Meetings

The JV II individual responsible for site operations, SHSO or authorized designate will conduct daily safety meetings at the start of each work shift for on site personnel and will require subcontractors to follow similar meeting procedures or participate in the JV II daily safety meetings.



## 7.0 Safety and Health Inspections

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The JV II Project Manager, individual responsible for site operations or andSHSO are required to perform site safety inspections using the Site Safety Inspection Checklist. The SHSO is responsible for conducting and preparing reports of daily safety inspections of work processes, site conditions, equipment conditions and submitting them for the project record. The SHSO will discuss any necessary corrective actions with the Project Manager and review new procedures. Copies of these reports are maintained on file at the project locations. Additionally, copies will be forwarded to the JV II HSM.

The JV II HSM or his designated representative will periodically conduct site visits and perform Site Safety Assessments. These reports are kept on file and are tracked in a database for each -Project Manager and designated individual responsible for site oeprations including the number of action items noted during the visit and written confirmation of the corrective actions for each item. These responses are compiled and provided to program management for review.

JV II does not anticipate, but may consider the use of, outside sources to provide safety inspections on an as-necessary basis.

As required, JV II safety equipment will comply with appropriate OSHA, National Institute for Occupational Safety and Health (NIOSH), American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and U.S. Coast Guard or other recognized certification organizations.



## 8.0 Safety and Health Expectations, Incentive Programs, and Compliance

---

### 8.1 Company Safety Program Goals

JV II considers safety the highest priority during work at all project sites and its business offices and has established a goal of **zero incidents**. All projects will be conducted in a manner which minimizes the probability of near misses, equipment/property damage or injury. JV II will use safety observation programs to identify and correct unsafe acts and conditions. Safety awareness programs will be used to provide continuous training and development of good safety practices. The JV II program will investigate all incidents to determine root causes and institute corrective actions to prevent recurrence. JV II will provide and enforce safety rules to protect employees, subcontractors, clients and the public.

### 8.2 JV II Employee Safety Responsibility Requirements

Each employee is responsible for personal safety as well as the safety of others in the area and is expected to participate fully in the *Safety Improvement Process*, particularly the Safety Observation Program. The employee use all equipment provided in a safe and responsible manner as directed by the SHSO. All JV II personnel will follow the policies set forth in the JV II Health and Safety Plan. Site personnel concerned with any aspect of health and safety will bring it to the attention of the Project Manager or SHSO. All project personnel have the authority to stop work if it is their judgment serious injury could result from continued activity. The individual responsible for site operations or SHSO will be notified immediately if this becomes necessary. To protect the health and safety of all personnel, employees that knowingly disregard safety policies/procedures may be subject to disciplinary actions up to and including termination.

### 8.3 Managers and Supervisors Safety Accountability

It is the duty of the first line supervisor to motivate employees to adhere to JV II's safety policy in each work situation. A first line supervisor for these purposes is defined as that person designated to give immediate onsite supervision to personnel involved in a task.

All supervisors will have complete knowledge of the safe procedure for all jobs and tasks under their supervision. When in doubt, they will seek assistance prior to initiating a task. This is the only acceptable manner in which to perform the task. If the task cannot be accomplished safely, it will not be attempted.



Supervisors will:

- Explain the safety procedure involved with a task to each employee and check frequently to see that the employee understands and works as instructed.
- Allocate sufficient time for the training and coaching of all employees to ensure that everyone knows the correct procedure for safely accomplishing required tasks.
- Prevent new employees from performing any tasks until required training is completed.
- Immediately correct unsafe conditions, which involved JV II employees or contractors.
- Ensure that the employees are outfitted with and wear personal protective equipment as specified by this APP, site-specific health and safety plan, other JV II procedures or as directed by the HSM, Project Manager, SHSO.
- Set a good safety example.
- Obtain the cooperation of employees and contractors.
- Provide a safe work environment for employees and contractors.
- Confirm contractor safety performance records have been verified prior to contract award and monitor contractor performance during operations.
- Report all accidents, near misses and property damage in accordance with the Incident Management and Reporting Procedure.
- Establish a safety culture, using the elements of the JV II Safety Improvement process, which promotes awareness, encourages participation and recognizes excellence.



## 9.0 Accident Reporting

---

### 9.1 Exposure Data (Man-hours Worked)

The JV I HSM with assistance from the JV II designated responsible partner tracks and maintains incident records as to Federal reporting requirements (OSHA 300 Log), as applicable to the incident. .

### 9.2 Accident Investigations, Reports, and Logs

The Site Safety Office conducts accident/incident investigations. A report is completed by the SHSO and is required to be reviewed and signed by the Project Manager. The report must be submitted to the Project Manager and HSM, as soon as possible, but no longer than 24 hours.

### 9.3 Immediate Notification of Major Incidents

JV II will immediately notify the Resident Officer in Charge of Construction (ROICC) of any major incident, including injury, fire, equipment/ property damage and environmental incident. A full report will be provided within 48 hours. Procedures to be followed in response to any major personal injury are detailed in the Site Specific Health and Safety Plan, Section 10.3, Incident Reporting, Investigation, and Response.



# 10.0 Medical Support

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On-site Medical Support/Off-site Medical Arrangements are provided in Section 10.0 of the HSP. Emergency phone numbers are listed in Attachment 14 of the HSP.



# 11.0 Personal Protective Equipment

---

Hazard Assessment Procedures/Written Certifications for Personal Protective Equipment Protection levels provided in the HSP have been established for the anticipated scope of work once on-site, results of air monitoring and visual inspection of the work activities may indicate the need for changes in these personal protective equipment (PPE) level(s). Any significant change in the PPE level will be approved by the SHSO in consultation with the JV II Project Manager (overall), CIH and/orHSM. PPE selection criteria are outlined in the HSP, Section 5.0, JV II Personal Protective Equipment.

All personnel using respiratory protection will be cleared by a physician for use of a respirator and will be fit-tested to ensure they can achieve an acceptable fit.



# 12.0 Plans Required by the Safety Manual

---

## 12.1 Hazard Communication Program

The Site-Specific Hazard Communication Program is included in Section 3.27.2 of the HSP. JV II Hazard Communication Program complies with 29 CFR 1926.59/1910.1200.

## 12.2 Emergency Response Plans

The Site-Specific Emergency Response and Contingency Plan is included in Section 10.0 of the HSP.

## 12.3 Layout Plans

Site delineation including work zones and sketches are included with the Work Plan.

## 12.4 Respiratory Protection Plan

The primary objective of respiratory protection is to prevent employee exposure to atmospheric contamination. When engineering measures to control contamination are not feasible, or while they are being implemented, personal respiratory protective devices will be used. Respiratory protection for this project will be evaluated on a case specific basis. At this time the use of respiratory protection is not anticipated, but is available if is required.

The criteria for determining respirator need have been evaluated based on the site contaminants; expected levels of protection are outlined in Section 5.1. Air monitoring will be conducted to confirm that respiratory protection levels are adequate (see Section 6.0 HSP). All respirator users will be OSHA trained in proper respirator use and maintenance. The SHSO and crew leaders will observe workers during respirator use for signs of stress. The SHSO, Project Manager, CIH, and JV II HSM will also evaluate the implementation of the HSP, periodically, to determine its continued effectiveness with regard to respiratory protection. All persons assigned to use respirators will have medical clearance to do so.

## 12.5 Lead Abatement Plan

Not Applicable.

## 12.6 Asbestos Abatement Plan

Not Applicable.



## 12.7 Abrasive Blasting

Not Applicable.

## 12.8 Confined Space

Not Applicable

## 12.9 Hazardous Energy Control Plan

This program establishes lockout practices of energy sources that could cause injury to personnel involved at the work site. The lockout program covers all employees and outside contractors affected by the cleaning, repairing, servicing and adjusting of prime movers, machinery, and equipment. Only authorized employees will perform such work.

- Authorized employees will be instructed in lockout/tagout procedures by their supervisor. Each new or transferred employee will be instructed by the supervisor in lockout procedures. A sufficient number of tags and padlocks will be supplied. During each phase of construction, a representative from JV II will be present while the electrical supervisor begins the lock out/tag out process.
- All equipment will be locked out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other energy-isolating device bearing a lock.
- Documented periodic inspections will be made periodically by supervisors to ensure that each procedure is being properly followed. The SHSO will ensure these inspections are being performed and keep on record the inspection reports on the job site. The inspection must include a review addressing the employee's responsibilities. Documentation is to include the date of the inspection, equipment on which the procedure was being utilized, the employees involved, and the person performing the inspection.
- Authorized employees will be certain as to which switch, valve, or other energy isolating devices apply to the equipment being locked out. More than one energy source may be involved. Any questionable identification of sources will be cleared through the supervisors.
- To begin the lockout process, use the following items as a guide. If for any reason the following items are in question, contact your immediate supervisor before moving forward. If more than one individual is required to lock out equipment, each person will place his own personal lock on the energy isolating device(s). One authorized individual and a competent person from the prime contractor (JV II) with the knowledge of the crew, may lock out equipment for the whole crew. In such cases, it is the responsibility of the individual to carry out all steps of the lockout procedure and inform the crew when it is safe to work on the equipment. Additionally, the authorized individual will not remove a crew lock until it has been verified that all individuals are clear and a prime contractor competent person is present.



- Notify all affected employees that a lockout is required.
- If the equipment is operating, shut it down by the normal stopping procedure.
- Operate the switch, valve, or other energy isolating devices so that the energy source(s) is disconnected or isolated from the equipment.
- Stored energy, such as capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc., must also be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
- Lockout energy isolating devices with an assigned individual lock. A second lock will be used if possible by the superintendent.
- After ensuring that no personnel are exposed and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. CAUTION: Return operating controls to the neutral position after the test.
- Attach a completed accident prevention tag and/or sign on the controls of the machine. The identification tag and/or sign will be coordinated with the electrical contractor and the prime contractor. A JV II representative will then make known to the facility personnel affected by this operation to familiarize them with the identification of these tags or signs and the procedures in which the contractors will be working by, and the point of contact of the electrical supervisor.
- The equipment is now locked out.
- To restore equipment to service, use the following items as a guide. If for any reason the following items are in question, contact your immediate supervisor before moving forward.
  - When the job is complete and equipment is ready for testing or normal service, check the equipment area to see that no one is exposed.
  - When equipment is clear, remove all locks. The energy isolating devices may be operated to restore energy to the equipment. There must be a supervisor from the electrical contractor and the prime contractor present.
- The following checklist for lockout training is a minimum requirement to provide to new employees. The supervisors must sign, date, and retain in their own records this information. The supervisor must also delivery a copy of this training to the Site Safety Officer.
  - Explain the significance of why a machine is locked or tagged out.
  - Explain what an employee is to do (and not do) when encountering a tag or lock on a switch or device they want to operate.
  - Explain the importance of notification of affected employees.
  - Show the employee the location of all locks, tags, and lockout devices.



- Explain how to recognize the applicable hazardous energy sources.
- Explain the type(s) and magnitude of energy to be isolated on the machinery and how to control that energy.
- Explain the proper sequence of locking out.
- All utility outages will follow the contract specifications, EM 385-1-1 and OSHA standards. The contractors will follow the above information as well as the following:
  - The contractor will supply the required tags and/or locks for each utility outage.
  - PWC Utility outages will be conducted with PWC Utilities, ROICC, the Contractor and sub-contractor.
  - Interior building/ facility utility outages will be coordinated with Facility Manager, ROICC, the Contractor and sub-contractor.
  - A preparatory meeting will be held prior to all electrical work and utility outages, this meeting will also cover any safety issues that may pertain to the scope of work. The Activity Hazard Analysis will be reviewed and any additional concerns will be annotated on this form.

## **12.10 Critical Lift Procedures**

Not Applicable.

## **12.11 Contingency Plan for Severe Weather**

Hurricane Preparedness Plan located in building 192.

## **12.12 Access and Haul Road Plan**

Not Applicable.

## **12.13 Demolition Plan**

Not Applicable.

## **12.14 Emergency Rescue (Tunneling)**

Not Applicable.

## **12.15 Underground Construction Fire Prevention and Protection Plan**

Not Applicable



## **12.16 Compressed Air Plan**

Not Applicable

## **12.17 Form Work and Shoring Erection and Removal Plans**

Not Applicable

## **12.18 Lift Slab Plans**

Not Applicable

## **12.19 Health and Safety Plan**

The JV IISite Specific HSP is included with this submission.

## **12.20 Blasting Plan**

Not Applicable

## **12.21 Diving Plan**

Not Applicable

## **12.22 Alcohol and Drug Abuse Prevention Plan**

JV II substance abuse procedures are on file.



## 13.0 Contractor Information to Meet the Requirements of the Major Sections of EM-385-1-1

---

In addition to this Accident Prevention Plan, JV Ilhas prepared a Site-Specific Health and Safety Plan to meet the major requirements of USACE Manual 385-1-1.



## Attachment 16

### Hurricane Preparedness Plan



# Hurricane Preparedness Plan

Removal Action  
Site 1, Bousch Creek,  
Naval Station Norfolk  
Norfolk, Virginia

Contract No N62467-03-D-0260  
Contract Task Order 017

Prepared for:



Prepared by:



August 2007





# Contents

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<b>Acronyms and Abbreviations .....</b>	<b>iii</b>
<b>1.0 Introduction.....</b>	<b>1-1</b>
1.1 Purpose .....	1-1
1.2 Scope .....	1-1
1.3 Discussion.....	1-1
<b>2.0 Definitions.....</b>	<b>2-1</b>
<b>3.0 Emergency Operating Procedures .....</b>	<b>3-1</b>
3.1 Condition V – Destructive Winds are Possible within 96 Hours (Early Preparedness).....	3-1
3.2 Condition IV – Destructive Winds are Possible within 72 Hours .....	3-1
3.3 Condition III – Tropical Storm Warning (Destructive Winds are Possible within 48 Hours).....	3-2
3.4 Condition II – Destructive Winds are Possible within 24 Hours (Tropical Storm Warning) .....	3-2
3.4.1 Site Superintendent Responsibilities: .....	3-2
3.4.2 HSO Responsibilities: .....	3-2
3.5 Condition I – Destructive Winds are Possible within 12 Hours .....	3-3
3.6 Resuming Site Operations.....	3-3
<b>4.0 Debriefing.....</b>	<b>4-1</b>
<b>5.0 References .....</b>	<b>5-1</b>

## Attachments

- A Hurricane Preparedness Responsibility Checklists
- B Emergency Phone Numbers
- C Hurricane Tracking Map



# Acronyms and Abbreviations

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COR	Condition of Readiness
FEMA	Federal Emergency Management Administration
HSO	Health and Safety Officer
JV II	AGVIQ-CH2MHILL Joint Venture II
mph	mile(s) per hour
NOAA	National Oceanic and Atmospheric Administration
NSN	Naval Station Norfolk
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
ROICC	Resident Officer In Charge of Construction



# 1.0 Introduction

---

## 1.1 Purpose

This procedure outlines the general responsibilities and actions to be taken in preparation for and response to a hurricane or hurricane warnings in the southeastern portion of Virginia, commonly referred to as the Tidewater area, where Naval Station Norfolk is located. All personnel should understand that predicting the occurrence and path of a hurricane is difficult, however the risk can be minimized and controlled by following the procedures in this plan.

## 1.2 Scope

This procedure is applicable to all contractor personnel, including Joint Venture II (JV II) subcontractors, temporary construction facilities, and remediation equipment present at NSN Site 1.

## 1.3 Discussion

This procedure provides information on how to protect personnel and property in the event of a hurricane. In the region of NSN, attention must be paid to all tropical storms and hurricanes due to the uncertainty of time and location of landfall.

The following table demonstrates accuracy of forecasting a hurricane landfall. Probability of a landfall occurrence is low more than 24 hours in advance of a storm.

Hours Before Landfall	Maximum Probability Values
72 Hours	10 Percent
48 Hours	13-18 Percent
36 Hours	20-25 Percent
24 Hours	35-45 Percent
12 Hours	60-70 Percent



## 2.0 Definitions

---

The following definitions apply to various terms used in this document.

### Conditions of Readiness (COR):

- **Condition V** - Destructive winds are possible at NSN **within 96 hours**. Normal daily job site cleanup and good housekeeping practices.
- **Condition IV** - Destructive winds are possible at NSN **within 72 hours**. Normal daily job site cleanup and good housekeeping practices. Collect and store in piles or containers, scrap lumber, waste material and rubbish, for removal and disposal at the end of each workday. Maintain the construction site, including storage areas, free of accumulation of debris. Stack form lumber in neat piles less than 4 feet high. Remove all trash debris and other objects which could become missile hazards. Contact Resident Officer In Charge of Construction (ROICC) for Condition requirements, updates, and completion of required actions.
- **Condition III** - Destructive winds are possible at NSN **within 48 hours**. Maintain **Condition IV** requirements. Begin securing the job site for and taking those actions necessary for **Condition I**, which cannot be completed within 18 hours. Cease all routine activities, which might interfere with securing operations. Begin collecting and stowing all gear and portable equipment. Make preparations for securing buildings. Review requirements pertaining to **Condition II** and continue action as necessary to attain **Condition III** readiness. Contact the weather station on Base for weather and COR updates and completion of required actions.
- **Condition II** - Destructive winds are possible at NSN **within 24 hours**. Curtail or cease routine activities until securing operations are complete. Reinforce or remove formwork and scaffolding. Secure machinery, tools, equipment, and materials, or remove from job site. Expend every effort to clear all missile hazards and loose equipment from the job site. Contact ROICC for weather and COR updates and completion of required actions.
- **Condition I** - Destructive winds are possible in at NSN **within 12 hours**. Perform and complete all remaining actions required for lower conditions of readiness. Secure the job site and leave the government premises.
- **Destructive Winds** - Generally winds reaching or exceeding the force of a tropical storm ( $\geq 39$  miles per hour [mph] or 34 knots). Winds from any storm system (tropical or otherwise) that are determined to have the potential to cause property damage or personal injury which would warrant NSN to initiate a Condition IV alert.
- **Gale** - Non-tropical windstorm with winds 38 to 63 mph (33 to 55 knots).
- **Hurricane** - A tropical cyclone in which the maximum sustained surface wind is 74 mph (64 knots) or greater.
- **Hurricane Warning** - A warning that sustained winds of 74 mph (64 knots) or higher, associated with a hurricane, are expected in a specified coastal area in 24 hours or less.



- **Hurricane Watch** - An announcement for specific areas where a hurricane or an incipient hurricane poses a possible threat to a coastal area, generally within 36 hours.
- **Missile Hazard** - Any object that may become airborne during high winds.
- **Severe Weather** - Any storm of tropical or non-tropical origin that has the capacity to produce destructive winds.
- **Storm** - Non-tropical windstorm with winds 38 to 62 mph (33 to 55 knots).
- **Storm Surge** - An abnormal rise in sea level accompanying a hurricane or other intense storm, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the storm.
- **Storm Tide** - The actual sea level resulting from the astronomical tide combined with the storm surge. This term is used interchangeably with "Hurricane Tide."
- **Tornado** - Violent rotating columns of air with winds 115 to 288 mph (100 to 250 knots).
- **Tropical Depression** - A tropical low-pressure system in which the maximum sustained surface wind is 38 mph (33 knots) or less.
- **Tropical Storm** - A tropical low pressure system in which the maximum surface wind ranges from 39 to 73 mph (34 to 63 knots) inclusive. This is the strength at which the National Hurricane Center applies a name to the storm.
- **Tropical Storm Watch** - Tropical storm conditions pose a threat to a coastal area generally within 36 hours.
- **Tropical Storm Warning** - A warning for tropical storm conditions with sustained winds within the range of 39 to 73 mph (34 to 63 knots), which are expected in a specified coastal area within 24 hours or less.



## 3.0 Emergency Operating Procedures

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### 3.1 Condition V – Destructive Winds are Possible within 96 Hours (Early Preparedness)

The Health and Safety Officer (HSO) will notify the project manager and Site Superintendent when a tropical storm has been named and/or any severe weather has the potential to produce destructive winds at NSN within **96 hours**. This will initiate COR Condition V. This phase will continue until:

- The storm or condition is downgraded.
- The storm track poses no threat to the site.
- Condition IV begins.

During Condition V, the progress of the storm will be monitored and tracked by Hurricane Tracking Maps (Attachment A). The ROICC will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition V.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition V.

### 3.2 Condition IV – Destructive Winds are Possible within 72 Hours

This COR starts when severe weather is within 72 hours of posing a threat to the project location. The HSO will ensure that the following steps are taken:

- Monitor the storm and inform the Project Manager and Site Superintendent of its progress.
- Check personal protective equipment (PPE) supplies and equipment to determine if any shipments are required or if pending shipments should be advanced or postponed.

During Condition IV, the progress of the storm will be continuously monitored and tracked. The Site Superintendent will instruct site personnel to begin general cleanup of all loose materials that may pose a hazard during high winds or rain. This will include removal of all debris, trash, and other debris that may become missile hazards. All form lumber will be stacked in neat piles less than 4 feet high. The ROICC will be contacted at least twice daily for Condition Requirements updates and to inform him of completion of required actions for Condition IV. Attachment B includes a list of emergency telephone numbers.

The Site Superintendent will keep all site personnel advised of the status of the storm and site preparation activities. Due to the urgency and amount of work involved in preparing for a threatening storm, all construction operations that might interfere with securing operations, such as starting a major excavation, will cease.

The Site Superintendent will ensure that the following steps are taken:



- Fill fuel tanks in all equipment on site.
- Secure stockpiled material on site.
- Review requirements for Condition IV with all site personnel.
- Maintain Condition IV requirements.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition IV.

### **3.3 Condition III – Tropical Storm Warning (Destructive Winds are Possible within 48 Hours)**

This COR starts when severe weather poses a threat to the project site within 48 hours. Condition III activities will also start if a threatening tropical storm is upgraded to a hurricane, or a severe storm approaching NSN has generated destructive winds in other locations. The Project Manager, Site Superintendent, and HSO will determine when to cease all operations based upon current weather conditions and/or as directed by the ROICC. If the storm or Condition is downgraded, the Project Manager, Site Superintendent, and HSO will contact the ROICC to decide if a downgrade of the COR is appropriate. Actions for Condition III will be maintained and the following shall also be completed:

- Machinery, tools, equipment, and materials will be secured or removed from the site.
- Take actions to secure job site necessary for Condition I that cannot be completed within 18 hours.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition III.

### **3.4 Condition II – Destructive Winds are Possible within 24 Hours (Tropical Storm Warning)**

Condition II begins when destructive winds are anticipated within 24 hours and/or as directed by the ROICC. The Project Manager, Site Superintendent, and HSO will determine when to demobilize from the site based upon weather conditions. During this phase:

#### **3.4.1 Site Superintendent Responsibilities:**

- Secure machinery, tools, equipment, and materials or remove them from the job site.
- Conduct a roll call of personnel on site and inform the HSO.
- Notify personnel, on leave, of schedule changes.
- Personnel needing to leave the project to attend to personal matters will notify their Site Superintendent immediately.
- Heavy equipment will be secured according to the manufacturer's recommendations.
- All small field equipment will be secured.

#### **3.4.2 HSO Responsibilities:**

- All visitors from the site are evacuated.



- Make a final site walk-through to determine that the site is secure and clear all missile hazards from the job site.
- Inform the Project Manager that all personnel are being released from the site.

If the storm or Condition is downgraded, the Project Manager, Site Superintendent, and HSO will conference to decide if a downgrade of the phase is necessary.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition II.

### 3.5 Condition I – Destructive Winds are Possible within 12 Hours

Condition I begins when destructive winds are anticipated within 12 hours and/or as directed by the ROICC. The Site Superintendent will ensure that the following steps are taken:

- Complete all remaining actions required for lower conditions of readiness.
- Secure job site access and evacuate to safe refuge.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Condition I.

### 3.6 Resuming Site Operations

The Project Manager will contact the ROICC to determine when site operations will resume. Although the hurricane/severe weather has passed, hazards may still exist because of water damage, other hazardous conditions, dangers from electric shock, poisonous snakes, etc.

The HSO will conduct a damage survey with the Project Manager and Site Superintendent. Photographs of the storm damage at the site will be taken by the Site Superintendent. They will develop a prioritized recovery plan from the survey findings. Subsequently, all site personnel will be notified when it is safe to return to work. Required personnel and subcontractor expertise will be mobilized to the site to repair any damaged equipment.

See Attachment A for the Hurricane Preparedness Responsibility Checklist - Resume Site Operations.



## 4.0 Debriefing

---

Following the return to work of site personnel, the Site Superintendent will conduct a debriefing with site personnel. The debriefing will accomplish the following objectives:

- Finalize a recovery plan.
- Review the Hurricane Preparedness Plan for effectiveness.
- Suggest and agree on improvements to the plan.
- Incorporate plan changes.

When completed, the project manager and/or Site Superintendent will meet with site personnel to discuss any corrective actions or changes in this plan.



## 5.0 References

---

The following references and sources of information may be consulted for additional guidance on hurricane preparedness and response:

- Disaster Planning Guide for Business and Industry, Federal Emergency Management Administration (FEMA).
- U.S. Department of Commerce; National Oceanic and Atmospheric Administration (NOAA).
- COMNAVREG MIDLANT INST



## Attachment A

### Hurricane Preparedness Responsibility Checklist



# Hurricane Preparedness Checklist

## Condition V (Landfall Within 96 Hours)

Date/Time Entered Condition V: \_\_\_\_\_

## Severe Weather/Tropical Storm:

\_\_\_\_\_

### Action Items

- ☐ Notify Project Manager
- ☐ Track of Storm Poses No Threat
- ☐ Storm or Condition is Downgraded
- ☐ Upgrade to Condition IV

## Storm Location

Date/Time: \_\_\_\_\_

Location/Coordinates: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Location/Coordinates: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Location/Coordinates: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Location/Coordinates: \_\_\_\_\_

Condition V Action Items Complete: \_\_\_\_\_

Date: \_\_\_\_\_



# Hurricane Preparedness Checklist

## Condition IV (Landfall Within 72 hours)

Date/Time Entered Condition IV: \_\_\_\_\_

### Action Items

- ☐ Notify Project Manager
- ☐ Notify Site Superintendent
- ☐ Notify Site Personnel
- ☐ Assemble shift personnel to begin preparation
- ☐ Track storm on hurricane tracking map (if applicable) (Attachment C)

### The Project Foremen will ensure the following steps are taken:

- ☐ Secure all heavy equipment located at the site in accordance with manufacturer's specifications.  
All equipment will be moved to a secured site location.
- ☐ All equipment fuel tanks will be filled.
- ☐ All subcontractors with equipment or supplies on site will be notified to begin removal procedures.

Condition IV Action Items Complete: \_\_\_\_\_

Date: \_\_\_\_\_



# Hurricane Preparedness Checklist

## Condition III (Landfall Within 48 hours)

Date/Time Entered Condition III: \_\_\_\_\_

### Action Items

- ☐ Provide the status of the storm to site personnel on an hourly basis
- ☐ Take actions to secure job site necessary for Condition I that cannot be accomplished in 18 hours
- ☐ Recheck all items on checklist for Condition IV to ensure they are complete (i.e., gas tanks are still filled)

See itemized equipment checklist (itemized list of equipment to be secured/removed and COR for action)

Condition III Action Items Complete: \_\_\_\_\_

Date: \_\_\_\_\_



# Hurricane Preparedness Checklist

## Condition II (Landfall Within 24 Hours)

Date/Time Entered Condition II: \_\_\_\_\_

### Action Items

- ☐ Evacuate all visitors from the site
- ☐ Conduct a role call of site personnel and inform the HSO
- ☐ Check the status of all incoming shipments of supplies and equipment
- ☐ Remove all unnecessary vehicles from the site
- ☐ Secure heavy equipment in accordance with manufacturer's specification
- ☐ Secure all valuable records and equipment
- ☐ Release personnel from the site
- ☐ Recheck all items on checklist for Conditions IV and III to ensure they are complete (i.e., gas tanks are still filled)

Condition II Action Items Complete: \_\_\_\_\_

Date: \_\_\_\_\_



# Hurricane Preparedness Checklist

## Condition I (Landfall Within 12 Hours)

Date/Time Entered Condition I: \_\_\_\_\_

### Action Items

- ☐ Complete all action items for lower conditions of readiness
- ☐ Secure job site access and evacuate to safe refuge

Condition I Action Items Complete: \_\_\_\_\_

Date: \_\_\_\_\_



# Hurricane Preparedness Checklist

## Resume Site Operations

Date/Time Resume Site Operations: \_\_\_\_\_

### Action Items

- ☐ Conduct a damage survey
- ☐ Notify all site personnel when to return to work
- ☐ Develop a prioritized recovery plan
- ☐ Inspect electrical equipment before re-energizing to detect and repair damage
- ☐ Provide bottled water for drinking until normal drinking water is deemed safe to drink
- ☐ Remove storm debris from site
- ☐ Notify ROICC of the resumption of site activities

Resume Site Operations Action Items Complete: \_\_\_\_\_

Date: \_\_\_\_\_



# Hurricane Preparedness Checklist

### Itemized Equipment Checklist, Condition III.

[illegible]



## Attachment B

### Emergency Phone Numbers



# Emergency Contact List

**CH2MHILL 24-hour Nurse Number 1-800-756-1130**

(See attached instructions \*)

## Medical Emergency 911

## Fire/Spill Emergency 911

## Security Emergency 911

See site Specific Hospital Route Maps for emergency contact information.

**On NSN Medical, Fire or Security Dispatch#**  
(757) 462 4444

## Utilities Emergency/POC #s

Sheldon Johnson (ROICC) M – F, 8 am – 4 pm  
757 322 4128

## CH2M HILL- Medical Consultant

Dr. Jerry H. Berke, M.D., M.P.H.

Health Resources

600 West Cummings Park, Suite 3400

Woburn, MA 01801-6350

781/938-4653

800/350-4511

(After hours calls will be returned within 20 minutes)

CH2MHILL Injury Management #:1-800-756-1130.

## AGVIQ Medical Consultant(s)

Refer to AQVIQ VBO office for a detailed list of Medical Facilities/contacts.

## JV II Program Director

Name: Craig Miller AGVIQ

Phone: 757-318-9420 x25/ 757- 531- 6425 (cell)

## JV II Project Manager (overall)

Name: Stephen Matney AGVIQ

Phone: 757-318-9420 x17/ 757- 544- 2632 (cell)

## JV II Deputy Program Manager

Name: Name: Michael Halil CH2M HILL – (JXO)

Phone: 904-777-4812 x 233/904-219-6277 (cell)

## JV II Project Engineer

Name: Ed Corack/CH2M HILL - VBO

Phone: 757-671-6215

## AGVIQ Corporate Human Resources Department

Name: Kristy Payne

TIKIGAQ Corp. Anchorage, AK

Phone: (907) 365 6242

## CH2M HILL Corporate Human Resources Department

Name: Pete Hannon, DEN

Phone: 303-771-0900

## JV II Site Superintendent

Name: Rob Lychalk

Cell Phone: 757-544-0524 (cell)

## JV II SHSO

Name: Katthy Jewell

Cell Phone: 216-534-1048 (cell)

## JV II HSM

Name: Richard Rathnow – CH2M HILL -ORO

Phone: (865) 483 9005 (572)

Cell: (865) 607 6734

## JV II HSO/POC (SHSO alternate)

Name: Glen Jackson - AGVIQ

Cell Phone: (757) 644 8293

(757) 318 9420 X 12

## AGVIQ Worker's Compensation & Auto Claims

Name: Kristy Payne

TIKIGAQ Corp. Anchorage, AK

Phone: (907) 365 6242

AGVIQ personnel to report all accidents or injuries to AGVIQ Corporate HSM or HSO immediately but no later than 24 hrs. Fatalities and hospitalizations shall require immediate notification to AGVIQ Corporate HSM.

## CH2MHill Worker's Compensation & Auto Claims

Sterling Administration Services

Phone: 800/420-8926 After hours: 800/497-4566

Report fatalities AND report vehicular accidents involving pedestrians, motorcycles, or more than two cars.

Fatalities and hospitalizations shall require immediate notification to JVI HSM.

## AGVIQ Corporate HSM

Name: Troy Izatt –

Office phone # (907) 365-6182

Cell phone # (907) 748-3697

## Federal Express Dangerous Goods Shipping

Phone: 800/238-5355

**Emergency Number for Shipping Dangerous Goods** Phone: 800/255-3924

Contact the Project Manager. Generally, the Project Manager will contact relevant government agencies.

**Facility Alarms:** Sound vehicle horn three times

## Evacuation Assembly Area(s):

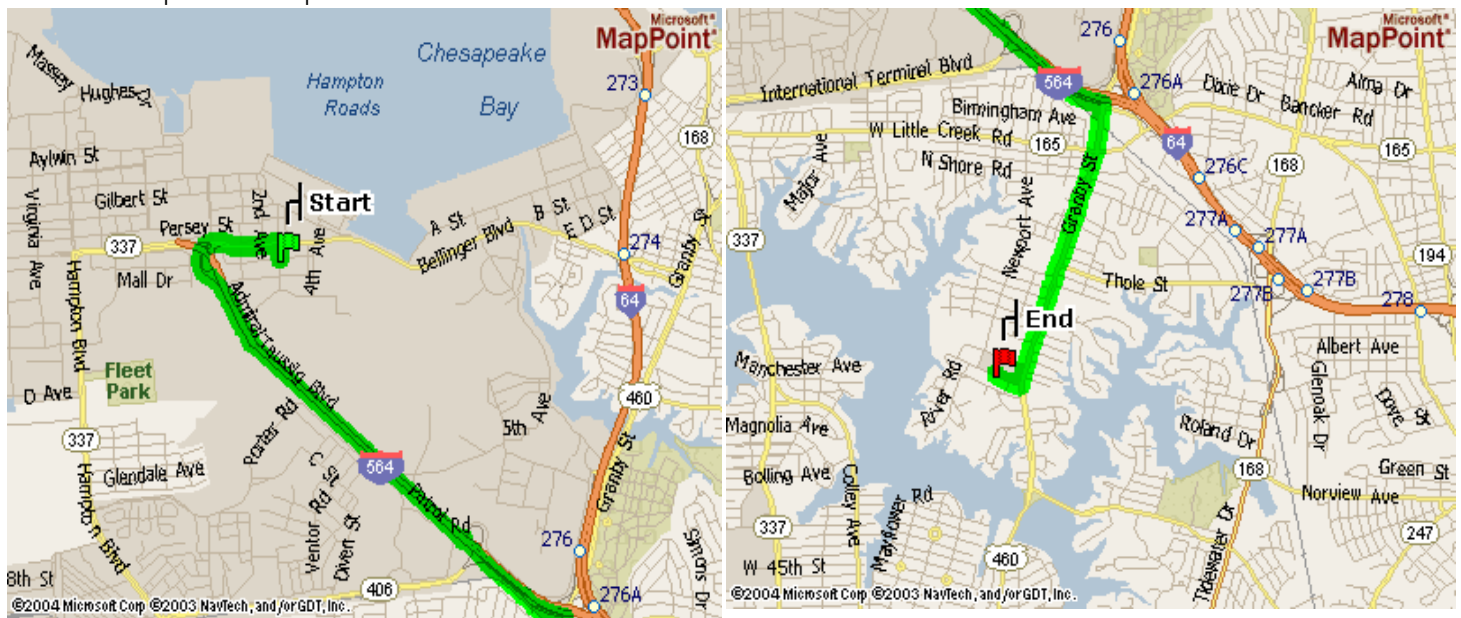
Site trailer. Account for all team members.

**Facility/Site Evacuation Route(s):** Developed site specific on-site prior to start of work

**Hospital Name/Address:** See site Specific Hospital Route Maps for emergency contact information.



FIGURE 10-4  
Hospital Route Map – Naval Station Norfolk



Bon Secours De Paul Medical Center  
150 Kingsley Lane  
Norfolk, Virginia 23505  
(757) 889-5000

### Directions to Hospital

- 1: Start out going North on 3RD AVE toward BELLINGER BLVD. <0.1 miles
- 2: Turn LEFT onto BELLINGER BLVD. 0.3 miles
- 3: Merge onto ADMIRAL TAUSSIG BLVD/I-564 E. 2.0 miles
- 4: Take the US-460/GRANBY ST exit. 0.6 miles
- 5: Turn RIGHT onto US-460 W/GRANBY ST. 1.4 miles
- 6: Turn RIGHT onto KINGSLEY LN. 0.1 miles
- 7: End at 150 Kingsley Ln Norfolk VA

- Local Hospital #:	757-889-5000	- Off Base Emergency ;911
- Medical Emergency:	911	
- Fire Emergency:	757-444-3333	- On Base Emergency 757-444-3333
- Police Emergency:	757-444-2324	

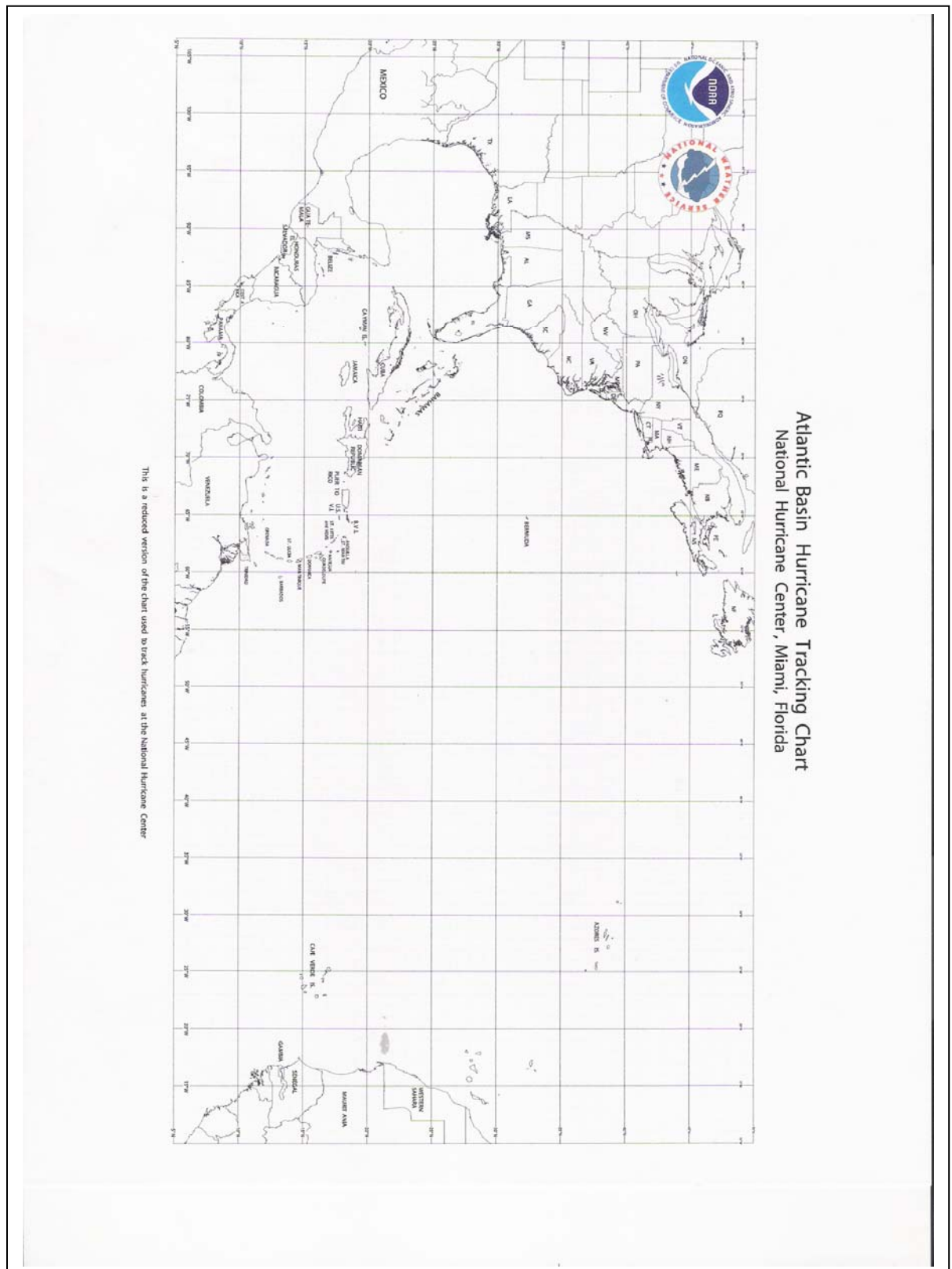


## Attachment C

### Hurricane Tracking Map



# HURRICANE TRACKING MAP





## Attachment 17

### Applicable H&S Program SOPs



# CH2MHILL

## Confined-Space Entry Standard of Practice HSE-203

### 1.0 Introduction

This Standard of Practice (SOP) applies to the following CH2M HILL employees:

(1) employees who enter confined spaces, regardless of the company responsible for confined-space-entry safety; (2) employees who are self-performing confined-space entry; and/or (3) safety coordinators (SCs) who may be responsible for providing oversight of a subcontractor's confined-space-entry operation.

A confined space is defined as a space that has all of the following characteristics:

- Large enough to allow personnel to enter the space with their entire body
- Limited openings for entry and exit
- Not designed for continuous human occupancy

Examples of possible confined spaces include underground vaults, pipelines, ducts, tunnels, digesters, storage tanks, sewers, silos, bins, boilers, bunkers, process vessels, ship holds, and pits. Following characterization of a confined space, a risk assessment is performed to identify the potential hazards that may exist in the space. The risk assessment is the basis for the confined-space-entry requirements.

This SOP provides information regarding the potential hazards during confined-space-entry operations. Injuries and deaths can occur in confined spaces because of oxygen deficiency; the presence of materials that may be flammable, explosive, toxic, radioactive, or corrosive; engulfment by liquids, powders, or grains; and physical contact with energy sources including electrical, moving equipment, hot surfaces, hot air, or steam. If atmospheric pressure either greater than or less than normal is identified as a potential hazard, then additional safety requirements beyond the scope of this SOP will be required to protect the health and safety of personnel involved and to comply with regulations. All employees who enter confined spaces must be aware of these hazards and of the associated safe work practices.

Excavations are not considered confined spaces for the purpose of this SOP. Entry into excavations must comply with the requirements of HSE-307.

### 1.1 Subcontractor Management

As described in the Subcontractor, Contractor, and Owner SOP (HSE-215), CH2M HILL may be required to provide oversight of subcontractors who enter confined spaces. When CH2M HILL oversight is required, the subcontractor must submit confined-space-entry procedures for review by the HS&E manager. The Subcontractor Safety Procedure Criteria – Confined-Space Entry, found in Attachment 2, provides the minimum criteria for subcontractor confined-space-entry safety procedures.



The subcontract terms and conditions expressly define responsibilities for health, safety, and environmental protection (HS&E), and these responsibilities define CH2M HILL's HS&E practices in the field. Consistent with HSE-215, subcontractors must determine how to enter confined spaces safely and in compliance with applicable HS&E regulations and industry standards, and how to correct deficiencies. Subcontractors retain control over their practices and are responsible and accountable for satisfying confined-space-entry regulations, as well as any additional requirements established in their own safety procedures.

The CH2M HILL Subcontractor Management Program Toolkit provides specific details regarding these processes.

## **2.0 Regulatory Review**

Attachment 1 provides a list, by country, of the regulations related to confined-space entry. Compliance with the regulations listed in this attachment will be achieved if this SOP is followed. This SOP may contain elements that are more restrictive than the legal requirements of individual countries; compliance with this SOP is required and may override less stringent country requirements. Contact the Regional Health and Safety Program Manager (RHSPM) for information on countries not listed in Attachment 1.

## **3.0 Responsibilities**

### **3.1 Project Manager (PM)**

The PM is responsible for the following:

- Evaluating the specific tasks to determine whether the work can be completed without employees entering confined spaces
- Obtaining all available information regarding the space prior to entry
- Consulting with the RHSPM to identify hazards to classify the space and determine entry requirements
- Assigning an entry supervisor for each confined space that will be entered by CH2M HILL employees
- Informing all affected CH2M HILL employees and subcontractor personnel of the location and hazards of the existing confined spaces

### **3.2 Regional Health and Safety Program Manager (RHSPM)**

The RHSPM or their designee is responsible for the following:

- Performing risk assessment to identify hazards and determine entry requirements with assistance from the project manager
- Determining, with assistance from the project manager, the permit classification of confined spaces to be entered
- Reviewing subcontractor confined-space-entry procedures and training documentation
- Reviewing and approval of the confined-space-entry permits or certificates



- Reviewing cancelled permits and certificates to inform the HS&E technical lead of any concerns involving this SOP
- Delegating confined space SOP responsibilities to appropriate staff, as necessary

### **3.3 Health, Safety, and Environmental Protection Manager (HSM)**

The HSM or HS&E Coordinator where applicable, may be delegated by the RHSPM to perform the project HS&E management responsibilities as listed in section 3.2.

### **3.4 Confined-Space-Entry Supervisor**

Entry supervisors are responsible for the following:

- Completing confined-space-entry training
- Recognizing and evaluating the potential hazards that may be present during entry, then informing all entrants and attendants of these potential hazards, including the possible behavioral effects, signs and symptoms, and consequences of exposure
- Completing the applicable permit or certificate and verifying that the permit or certificate requirements have been met prior to authorizing entry
- Verifying that all authorized entrants and attendants have completed confined-space-entry training
- Assigning a confined-space attendant for each confined space that will be entered
- Verifying that effective communication methods are provided for entrants and attendants
- Conducting atmospheric monitoring or delegating this responsibility to a qualified individual
- Posting the permit or certificate at the opening to the space
- When supervising entry into permit-required confined spaces (PRCS), verifying that rescue services are available and that the means for summoning them are operable
- Conducting a pre-entry briefing with all entrants and attendants to review the planned work and the requirements of the permit or certificate
- Documenting that nonpermit confined spaces pose no actual or potential atmospheric hazard and all nonatmospheric hazards have been eliminated prior to entry
- Evacuating the space and suspending entry if any permit or certificate requirement is not met or if conditions change and present an actual or potentially dangerous situation
- Suspending entry if unauthorized entrants enter the space, and removing unauthorized entrants from the space
- Terminating the entry and canceling the permit or certificate when the work is completed



- Informing the owner of any hazards confronted or created in the space or any problems encountered during entry
- Sending a copy of the canceled permit or certificate to the RHSPM.

### **3.5 Confined-Space Attendants/ Standby Person**

Attendants /standby personnel and are responsible for the following:

- Completing confined-space-entry training
- Knowing the hazards that may be present during entry, including the possible behavioral effects and the modes, signs, symptoms, and consequences of exposure
- Communicating with the entrants as appropriate to monitor entrant status
- Maintaining an accurate count of entrants in the space
- Remaining outside the permit space until relieved by another qualified attendant, and performing no duties that might interfere with the attendant's primary duty of monitoring the entrants
- Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space
- Verifying that the entry supervisor has authorized entry, and that all requirements of the permit or certificate have been satisfied prior to allowing entry
- Verifying that the atmosphere has been tested at the frequency provided on the permit or certificate, verifying that the atmosphere is within acceptable safe levels, and documenting this testing on the permit or certificate
- Knowing how to use air monitoring equipment and interpret air monitoring instrument readings and alarms, and understanding the instrument's limitations
- Attending a pre-entry briefing prior to entry
- Performing non-entry rescues as specified on the confined-space-entry permit (CSEP)
- Maintaining rescue equipment at or near the confined space
- Summoning rescue and emergency services when entrants need assistance exiting the space
- Warning unauthorized persons to stay away from the space, and notifying the entry supervisor and entrants if unauthorized persons enter the space
- Evacuating entrants when a prohibited condition or dangerous situation is recognized, and when unable to perform attendant responsibilities
- Informing the entry supervisor of any hazards confronted or created in the space, or any problems encountered during entry
- Acting in the role of the Confined-Space Entry Supervisor, as assigned



### 3.6 Confined-Space Entrants

Entrants are responsible for the following:

- Completing confined-space-entry training
- Knowing the hazards that may be present during entry, including the possible behavioral effects and the modes, signs, symptoms, and consequences of exposure
- Communicating with the attendant as appropriate to enable the attendant to monitor entrant status
- Verifying that the entry supervisor has authorized entry and that all requirements of the permit or certificate have been satisfied prior to allowing entry
- Verifying that the atmosphere has been tested at the frequency provided on the permit or certificate, and that the atmosphere is within acceptable safe limits and documented on the permit or certificate
- Attending a pre-entry briefing prior to entry
- Properly using the equipment required for entry
- Entering only the confined spaces that they are authorized to enter
- When using an alternative-procedure confined-space certificate, ensure that a buddy or an attendant is positioned outside the space during entry
- Alerting the attendant when a prohibited condition or dangerous situation is recognized
- Evacuating the space upon orders of the attendant or entry supervisor when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized
- Informing the attendant or entry supervisor of any hazards confronted or created in the space, or any problems encountered during entry

### 3.7 Safety Coordinators (SC)

SCs include both Safety Coordinator - Hazardous Waste (SC-HW) and Safety Coordinator - Construction (SC-C). The SC is responsible for the following:

- Providing field oversight of subcontractors entering confined spaces, and completing the self-assessment checklist for confined-space entry
- Suspending entry operations when a subcontractor is not following their confined-space-entry procedures

### 3.8 HS&E Technical Lead

The HS&E technical lead is responsible for the following:

- Discussing concerns raised by the use of this SOP and taking appropriate actions to ensure its effectiveness
- Reviewing the effectiveness of this SOP on an annual basis



## **4.0 CH2M HILL Policy**

It is the policy of CH2M HILL to avoid, employee entry into confined spaces, whenever possible. When entry cannot be avoided, all entries into confined spaces must be performed according to the requirements of this SOP. This SOP was developed to protect the health and safety of CH2M HILL employees and to comply with applicable regulations.

## **5.0 Definitions**

### **5.1 Acceptable Safe Levels**

Acceptable safe levels refer to atmospheric conditions that fall within the following ranges:

- Oxygen concentration between 19.5 and 23.5 percent by volume
- Flammable gas, vapor, or mist concentrations less than 10 percent of the lower explosive limit (LEL) or less than 5 percent in Australia
- Toxic gas, vapor or dust concentrations less than published occupational exposure limits (OEL)
- Airborne combustible dust concentrations that are less than the lower flammable limit (LFL). This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 meters) or less.

### **5.2 Atmospheric Hazards**

Atmospheric hazards are conditions that may expose an individual to the risk of death, incapacitation, impairment, inability to self-rescue, injury, or acute illness from an oxygen deficient or enriched atmosphere; flammable or explosive conditions; or a toxic atmospheric environment.

### **5.3 Attendant or Standby Person**

An attendant or standby person is an individual positioned outside the confined space who monitors the authorized entrants and who fulfills the attendant's responsibilities specified in section 3.4. The attendant may also function in the role of the entry supervisor and perform all duties addressed in section 5.8.

### **5.4 Authorized Entrant**

An authorized entrant is an individual authorized by the entry supervisor to enter a confined space.

### **5.5 Engulfment**

Engulfment refers to the surrounding and effective capture of an individual by a liquid or finely divided solid substance that can be aspirated to cause death by filling or plugging the respiratory system, or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.



## **5.6 Entrapment**

Entrapment means the trapping or asphyxiating of an individual by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section.

## **5.7 Entry**

Entry is defined as breaking the plane of a confined-space opening with any part of the body.

## **5.8 Entry Supervisor**

An entry supervisor is the individual responsible for overseeing confined-space-entry operations and who fulfills the entry supervisor's responsibilities specified in section 3.3. An entry supervisor may also serve as an attendant or as an authorized entrant, as long as that individual can meet all the responsibilities of those positions.

## **5.9 Limited Openings for Entry or Exit**

Limited openings for entry or exit are those space openings that are configured or sized in a manner that present a physical barrier, impeding self-rescue of an individual inside the space. Doorways and other openings that an individual can walk through are not generally considered limited means of entry or exit, however they should be evaluated on a case-by-case basis to ensure that the space does not meet the definition of a confined space.

## **5.10 Nonatmospheric Hazards**

Nonatmospheric hazards include engulfment and entrapment hazards, as well as other recognized serious safety or health hazards.

## **5.11 Not Designed for Continuous Human Occupancy**

A space not designed for continuous human occupancy is one that was not originally designed or subsequently redesigned to primarily provide for human health or safety (such as providing ventilation, lighting, means of access, and sufficient room to accomplish the anticipated task).

## **5.12 Other Serious Safety or Health Hazards**

These may include exposure to radiation, electricity, moving parts, releases of energy, and material introduced into the space.

## **5.13 Oxygen Deficiency**

An oxygen deficiency exists where the atmosphere contains less than 19.5 percent oxygen by volume.

# **6.0 Confined-Space-Entry Program**

## **6.1 Confined-Space Evaluation/Risk Assessment**

### **6.1.1 Identification**

Each PM should consult the site owners to determine if there are any confined spaces within the CH2M HILL project area. All identified confined spaces within the project area must



) have a sign posted at the opening or entry point to warn all CH2M HILL employees, subcontractors and site visitors. In addition to the signs, the PM should also inform all CH2M HILL employees and subcontractors of the location of each identified confined space, and that no person shall attempt to enter those spaces without the authorization of a permit or certificate.

### **6.1.2 Determine if Entry is Required**

The project manager shall evaluate the specific tasks to be performed to determine whether the work can be completed without employees entering confined spaces. If entry is required, all available information should be obtained regarding the space including (1) blue prints of the space, (2) potential atmospheric and nonatmospheric hazards, and (3) identification of all energy sources to assist in the risk assessment. The RHSPM/HSM should be consulted early in the project planning to identify the hazards and determine the entry requirements. The PM shall assign a confined-space-entry supervisor for each confined space to be entered by CH2M HILL employees.

### **6.1.3 Classification**

The RHSPM/HSM, with assistance from the PM and owner representative, shall determine the appropriate classification of any confined space that is to be entered by CH2M HILL employees. Confined spaces may be classified as permit-required confined spaces (PRCS), alternative-procedure confined spaces, or nonpermit confined spaces. Attachment 3 provides a flowchart that can be used to classify confined spaces.

A confined space is classified as a PRCS if **at least one** of the following characteristics exists:

- )
- The space contains or has the potential to contain an atmospheric hazard (including oxygen deficient atmospheres).
  - The space contains material that has the potential for engulfment.
  - The space contains an internal design that has the potential for entrapment.
  - The space contains any other recognized serious safety or health hazard.

A PRCS may be reclassified as a nonpermit confined space when regulatory requirements allow for reclassification and if the space poses no actual or potential atmospheric hazard and if all nonatmospheric hazards can be eliminated without entry into the space.

Nonatmospheric hazards may be eliminated through cleaning and isolation methods provided in sections 6.7.2 and 6.7.3 respectively. The basis for determining that all hazards in a space have been eliminated must be confirmed and documented. If the space must be entered to eliminate nonatmospheric hazards, the initial entry must comply with PRCS entry requirements. PRCS entry requires the completion of a Confined-Space-Entry Permit as outlined in section 6.4.

)

Confined spaces are classified as alternative-procedure confined spaces if the only hazard within the space is an atmospheric hazard and the hazard can be controlled to acceptable safe levels solely by forced-air ventilation. If specific country requirements do not allow for classifying a space as an alternative-procedure confined space, in accordance with the definition in this SOP, then all sections referencing alternative procedures do not apply. If the space must be entered in order to evaluate hazards, the initial entry must comply with



PRCS entry requirements. Alternative procedure confined-space entry requires the completion of an Alternative-Procedure Certificate as outlined in section 6.5.

Confined spaces are classified as nonpermit confined spaces if they do NOT contain or do NOT have the potential to contain any hazard capable of causing death or serious physical harm. When a nonpermit space has been identified, any change in the conditions or activities from the original evaluation must be re-evaluated to determine if new hazards are created or existing controlled hazards are no longer controlled which would warrant the reclassification of the space to be a PRCS or alternate procedure space. Nonpermit confined-space entry requires the completion of a Nonpermit Certificate as outlined in section 6.6.

## **6.2 Training Requirements**

Employees who enter confined spaces, or who act as the confined-space-entry supervisor or attendant are required to complete a classroom based Confined-Space-Entry Training Program. The CH2MHILL Confined-Space-Entry Training Program shall be used to the extent possible and supplemented with individual country requirements where applicable. Contact the regional safety program assistant (SPA) to schedule confined-space training as listed in HSE Training SOP (HSE-110).

Employees who are assigned to a confined-space-entry rescue team must complete the training specified by the RHSPM/HSM in the site written HS&E plan and section 6.8.3 of this SOP prior to the start of the confined-space entries on the project.

Employees who are required to wear respiratory protection during confined-space entry must complete the appropriate respirator safety training course as described in the Respiratory Protection SOP (HSE-121).

Employees who are required to perform or work under lockout or tagout procedures are required to complete the Lockout and Tagout Training Course.

Subcontractors entering confined spaces are responsible for complying with all applicable HS&E training requirements and for providing the training necessary to complete their tasks safely.

## **6.3 Confined-Space Entry**

The following requirements apply when entering a confined space:

- Entrants, attendants, and the entry supervisor shall have successfully completed confined-space-entry training.
- A Confined-Space-Entry Permit (CSEP) shall be completed as outlined in section 6.4, prior to entering a PRCS. A Confined-Space Alternative Procedure Certificate (APC) shall be completed as outlined in section 6.5, prior to entering an alternative-procedure confined space. A Confined-Space Nonpermit Certificate (NPC) shall be completed as outlined in section 6.6, prior to entering a nonpermit confined space.
- The completed permit or certificate shall be posted for review near the space entrance point.



- The entry supervisor shall conduct a pre-entry briefing with all entrants and attendants prior to entry in accordance with section 6.10.
- Entrants and attendants shall verify that the entry supervisor has authorized entry and that all requirements of the permit or certificate have been satisfied prior to each entry.
- Atmospheric monitoring for oxygen, combustible gases, and potential toxic air contaminants shall be conducted at the frequency provided on the permit or certificate. Entry shall not be permitted if an atmospheric hazard is detected above acceptable safe levels. Atmospheric monitoring shall be performed in accordance with section 6.9.
- Entrants shall evacuate the space upon orders of the attendant or entry supervisor, when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized.
- Entrants and attendants shall inform the entry supervisor of any hazards confronted or created in the space or any problems encountered during entry. The entry supervisor shall inform the owner of such issues.
- The entry supervisor shall send a copy of the canceled permit or certificate to the RHSPM or designee; the original shall be maintained in the project file for the period required as stated in section 6.12.

#### **6.4 Confined-Space-Entry Permit (CSEP)**

The CSEP provided in Attachment 4 shall be completed by the entry supervisor prior to entry into a PRCS. The following requirements apply to completing and using the CSEP:

- Entry may not be made or continued after the permit expiration date and/or time.
- All expected hazards of the confined space shall be listed on the CSEP.
- An entry supervisor shall be assigned to oversee all entry operations. Entry supervisor responsibilities are provided in section 3.4.
- An attendant shall be assigned with the fundamental responsibility of monitoring entrants. Attendant responsibilities are provided in section 3.5.
- Control measures used to reduce or eliminate hazards shall be listed on the CSEP. Additional details are provided in section 6.7.
- Communication and rescue procedures shall be identified on the CSEP and tested prior to entry. Additional details are provided in section 6.8.
- Atmospheric monitoring requirements shall be identified on the CSEP. Additional details are provided in section 6.9.
- The RHSPM shall review the CSEP and approve its use by signing the CSEP.
- The entry supervisor shall authorize entry by signing the CSEP.



- The entry supervisor shall document that all listed entrants in section 6.0 of the CSEP have completed confined-space training, have attended a pre-entry briefing, and are authorized to enter the space.
- Only individuals listed in section 6.0 of the CSEP shall be permitted to enter the space.
- The entry supervisor shall sign the CSEP indicating its cancellation.
- Problems encountered during the entry shall be listed on the CSEP.

### **6.5 Alternative Procedure Certificate (APC)**

The APC provided in Attachment 5 shall be completed by the entry supervisor prior to entry into an alternative-procedure confined space. The following requirements apply to completing and using the APC:

- Entry may not be made or continued after the certification expiration date and/or time.
- All expected atmospheric hazards of the confined space shall be listed on the APC.
- An entry supervisor shall be assigned to oversee all entry operations. Entry supervisor responsibilities are provided in section 3.3.
- An attendant shall be assigned with the fundamental responsibility of monitoring entrants. Attendant responsibilities are provided in section 3.4.
- The entry supervisor shall verify that nonatmospheric hazards do not exist within the space.
- Communication methods shall be established between entrants and the attendant.
- Entry covers shall be removed safely and openings guarded from both fall hazards and from objects entering the space.
- Continuous forced-air ventilation from a clean air source shall be positioned to ventilate the immediate areas where employees are working and shall continue until they have left the space. Ventilation shall be used in accordance with section 6.7.4.
- Atmospheric monitoring requirements shall be identified on the APC. Additional details are provided in section 6.9.
- The entry supervisor shall authorize entry by signing the APC.
- The entry supervisor shall document that all listed entrants in section 5.0 of the APC have completed confined-space training, have attended a pre-entry briefing, and are authorized to enter the space.
- Only individuals listed in section 5.0 of the APC shall be permitted to enter the space.
- The entry supervisor shall sign the APC indicating its cancellation.
- Problems encountered during the entry shall be listed on the APC.



## **6.6 Nonpermit Certificate (NPC)**

The NPC provided in Attachment 6 shall be completed by the entry supervisor prior to entry into a nonpermit confined space. The following requirements apply to completing and using the NPC:

- Entry may not be made after the certification expiration date.
- An entry supervisor shall be assigned to oversee all entry operations. Entry supervisor responsibilities are provided in section 3.3.
- An attendant or buddy shall be assigned with the fundamental responsibility of monitoring entrants. Attendant responsibilities are provided in section 3.4. When a buddy is used, the buddy shall remain in the space with the entrant unless leaving to get emergency assistance.
- The entry supervisor shall verify that nonatmospheric hazards do not exist within the space.
- Communication methods shall be established between entrants and the attendant or buddy.
- Entrants shall be informed to exit the space immediately if any hazards are observed.
- Atmospheric monitoring requirements shall be identified on the NPC. Additional details are provided in section 6.9.
- The entry supervisor shall authorize entry by signing the NPC.
- The entry supervisor shall document that all listed entrants in section 5.0 of the NPC have completed confined-space training, have attended a pre-entry briefing, and are authorized to enter the space.
- Only individuals listed in section 5.0 of the NPC shall be permitted to enter the space.
- The entry supervisor shall sign the NPC indicating its cancellation.
- Problems encountered during the entry shall be listed on the NPC.

## **6.7 Control Measures**

Control measures are the primary methods used for achieving acceptable entry conditions in a confined space. Control measures include communication, cleaning, isolation, ventilation, protective equipment, rescue equipment, and miscellaneous requirements. Additional information is provided below for each control measure.

### **6.7.1 Communication**

Two-way communication must be maintained at all times between entrants and the attendant. Communication systems may include visual, verbal, two-way radios, cellular phones, intercoms, closed-circuit video, continuous electronic monitoring equipment, alarm systems, and signaling systems.



### **6.7.2 Cleaning**

Confined spaces shall be cleaned and decontaminated of hazardous materials to the extent feasible prior to entry. Where cleaning is not practical, appropriate personal protective equipment (PPE) shall be worn to provide protection from the hazards. The RHSPM/HSM should be consulted for required PPE.

Purging, flushing, steaming, and pressure washing are methods of cleaning the space to eliminate or control atmospheric or chemical hazards.

Insertion of inert gases may be required to eliminate a flammable atmosphere. A noncombustible gas (such as nitrogen) is used to displace the flammable gas or vapor. The introduction of inert gases into the space may create an oxygen deficient atmosphere, requiring further control measures to ensure the safety of the space.

Nozzles of air, inert gas, and steam line hoses, when used to clean spaces that contain flammable atmospheres, shall be bonded to the space. Bonding devices shall not be attached or removed in the presence of flammable concentrations.

### **6.7.3 Isolation**

Confined spaces shall be isolated to remove from service and completely protect against the release of energy and material into the space. Isolation methods include blanking or blinding, line breaking, double block and bleed, lockout or tagout, and blocking or disconnecting all mechanical linkages. Energy sources may include electrical, mechanical, hydraulic, pneumatic, chemical, thermal, radioactive, and the effects of gravity.

Blanking or blinding is a process that covers a pipe, line, or duct by fastening a solid plate that completely covers the bore and that is capable of withstanding the maximum upstream pressure.

Line breaking is a process that intentionally opens a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Double block and bleed is a process that isolates the space from a line, duct, or pipe by locking or tagging two closed inline valves and locking or tagging open to the outside atmosphere a drain or bleed in the line between the two closed valves.

Lockout or tagout is a process that uses a lock, tag, or other device to physically remove sources of energy from a confined space. Specific requirements for lockout/ tagout are contained in the Lockout/Tagout SOP (HSE-310).

Confined spaces that can not be isolated because it may create a greater hazard, such as active sewers, must have detailed procedures as part of the confined-space-entry permit that continually monitors inside and outside of the confined space for atmospheric and other hazards that pose a risk to entrants.

### **6.7.4 Ventilation**

Confined spaces may require mechanical ventilation when atmospheric monitoring indicates that an atmospheric hazard exists above acceptable safe levels or when there is a potential for an atmospheric hazard to develop.



Continuous mechanical ventilation shall be maintained where flammable or toxic substances are used or when oxygen-consuming activities are performed as part of the scope of work (such as welding, painting, and use of solvents).

Electrically powered ventilation systems shall not be used for spaces that may contain a flammable atmosphere. Only explosion-proof (In the US, meeting the National Electric Code requirements for Class I, Division I locations) ventilation systems shall be used unless atmospheric monitoring has proven the existence of a non-explosive atmosphere.

Oxygen shall not be used to power air-driven ventilators or to ventilate any space location.

The following requirements apply to the use of mechanical ventilation systems:

- The air supply from forced-air ventilation systems shall originate from a clean source and may not increase the atmospheric hazards of the space.
- Air intakes and exhausts shall be evaluated to avoid recirculating contaminated air.
- Blowers, vents, or duct locations shall be placed and directed in a manner that will ventilate the immediate areas where entrants are present.
- Loss of system efficiency shall be limited by using the shortest duct possible, maintaining tight connections, and keeping ducts as straight as possible.
- The space shall be monitored for carbon monoxide if gasoline-powered ventilation systems are used.
- Nozzles of air hoses, when used to ventilate spaces that contain flammable atmospheres, shall be bonded to the space to dissipate potential static electricity buildup. Bonding devices must not be attached or removed if there is a potential presence of flammable vapor concentrations.

#### **6.7.5 Protective equipment**

Confined spaces may require the following protective equipment:

- Air-powered tools should be used in lieu of electrical tools whenever possible.
- Ground fault circuit interrupters or earth leakage devices shall be used with all electrical appliances operated in a confined space.
- Electrical power tools shall be double insulated or grounded.
- When dangerous air concentrations may be attributable to flammable and/or explosive substances, lighting and electrical equipment shall be Class 1, Division 1-rated per National Electrical Code and no ignition sources shall be introduced into the area. In addition, spark-proof tools may be required. These shall be defined as necessary on the confined-space-entry permit.
- Pedestrian, vehicle, and other barriers shall be provided to protect entrants from external hazards, as necessary.
- Respiratory protection may be required if other control measures do not reduce the atmospheric conditions to acceptable safe levels. When respirators are used, the



requirements of the CH2M HILL Respiratory Protection SOP (HSE-121) shall be followed. Either an air-line respirator equipped with an escape bottle or self-contained breathing apparatus shall be worn if an oxygen-deficient atmosphere exists. The RHSPM/HSM shall be consulted before entering an oxygen-deficient atmosphere.

- Fall protection may be required if entrants are exposed to fall hazards.
- Spaces that contained substances corrosive to the skin or substances that can be absorbed through the skin may require the use of PPE. The RHSPM/HSM should be consulted for required PPE.

#### **6.7.6 Rescue equipment**

Retrieval systems shall be used to facilitate non-entry rescue from PRCS, unless the retrieval equipment increases the overall risk of entry or would not contribute to the rescue of entrants. Retrieval systems shall not be used for rescue under the following conditions:

- Obstructions or turns prevent the pull on the retrieval line from being transmitted to the entrant.
- The entrant being rescued with the retrieval system would be injured because of forceful contact with projections in the space.
- Retrieval lines of multiple entrants can not be controlled so as to prevent entanglement hazards.
- Entrants are using air-supplied respirators and the retrieval lines can not be controlled so as to prevent entanglement hazards with the air lines.

Retrieval systems shall meet the following requirements:

- Entrants shall wear a body harness with a retrieval line (lifeline) attached to the D-ring on the harness's back. Wristlets shall not be used unless it can be demonstrated that the use of a body harness is not feasible or creates a greater hazard, and that the use of wristlets is the most effective alternative. See the Fall Protection SOP (HSE-308) for more specific requirements.
- The other end of the lifeline shall be attached to the mechanical retrieval device (when required) or a fixed point outside the space so that non-entry rescue can begin as soon as the attendant becomes aware that rescue is necessary.
- A mechanical retrieval device shall be positioned at the access point and be ready for use for all vertical-type spaces (access openings above the entrants head) that are 5 feet (1.5 meters) or greater in depth. Each entrant shall remain attached to a separate retrieval device during the entry.

#### **6.7.7 Miscellaneous requirements**

The following miscellaneous requirements may pertain to certain confined spaces:

- Ladders may be required to provide safe ingress and egress to the space.



- A hot work permit may be required for operations in the space that are capable of providing a source of ignition. See the Welding and Cutting SOP (HSE-314) for more specific details concerning hot work permits.
- Work that involves the use of a flame, arc, sparks, or other source of ignition is prohibited within or adjacent to a space that contains, or has the potential to contain, a flammable atmosphere. This includes work in adjacent spaces having common walls, floor, or ceiling with the space at issue.
- When welding or cutting is performed inside the space, the gas cylinder and welding machine shall be positioned outside the space and local exhaust ventilation shall be required. The cylinders and welding machine must be positioned away from the air intake of the local exhaust ventilation system.
- Welding torches and leads shall be removed from the space when not in use.

## **6.8 Rescue and Emergency Procedures**

One of the following rescue and emergency procedures shall be established and documented on the CSEP prior to PRCS entry:

- Non-entry retrieval system rescue
- Third-party rescue team
- CH2M HILL rescue team

The rescue that will be used on a specific project will be determined by the RHSPM/ HSM as part of developing the site written safety plan.

### **6.8.1 Non-entry Retrieval System Rescue**

When non-entry rescue is feasible, retrieval systems shall be setup and used in accordance with section 6.7.6 of this SOP. The attendant(s) assigned to a specific confined space shall be familiar with the operation of the retrieval system and shall make at least one successful simulated rescue in which a dummy, mannequin, or actual person is rescued from the space. If the attendant is unfamiliar with the specific type of retrieval system used for at a confined-space entry, the attendant must demonstrate their ability to properly use the system to the SC. The attendant shall be trained in basic first aid and cardiopulmonary resuscitation (CPR) and hold a current certification card. Communication methods shall be established and tested between the attendant and the local emergency medical provider and/or third-party rescue team (if necessary).

When non-entry rescue would increase the overall risk of entry or would not contribute to the rescue of entrants, a third-party or CH2M HILL rescue team shall be established.

### **6.8.2 Third-Party Rescue Team**

Third-party rescue teams shall not be used without approval from the Regional Health and Safety Program Manager (RHSPM).

Third-party rescue teams include any team comprised of employees other than CH2M HILL employees and may include a client, contractor, subcontractor, local emergency response organization, or independent rescue team. All third-party rescue teams shall be evaluated



by the RHSPM to determine their ability to provide proficient rescue services and their ability to respond in a timely manner, based on the specific hazards involved with the entry. The RHSPM shall also verify that the rescue team is trained, equipped, able, and willing to provide rescue services.

The requirements of section 6.8.3 also apply to third-party rescue teams. In addition, these teams shall be provided access to all spaces from which rescue may be necessary so that the teams can develop rescue plans and practice operations.

### **6.8.3 CH2M HILL Rescue Team**

The following requirements apply to a confined-space rescue team made up of CH2M HILL employees:

- The Regional Health and Safety Program Manager must approve the use of a CH2M HILL rescue team.
- Team members must complete confined-space-entry training.
- Team members shall be informed of the hazards that they may confront during rescue operations.
- All PPE and rescue equipment necessary to conduct a safe-entry rescue shall be provided and must be readily available.
- Team members shall be trained on rescue responsibilities and the proper use of PPE and rescue equipment to be used on the specific confined-space entry.
- All team members shall be trained in basic first aid and CPR, with at least one team member holding a current certification card.
- The rescue team shall have made at least one simulated rescue in which a dummy, mannequin, or actual person is rescued from a space of similar configuration within the last 12 months.
- Communication methods shall be established and tested between the rescue team and entrants, and the local emergency medical provider. The local emergency medical provider shall be notified in advance of entries into the PRCS.

### **6.9 Atmospheric Monitoring**

All confined spaces shall be monitored for atmospheric hazards. The entry supervisor shall conduct the atmospheric monitoring, or delegate this responsibility to a qualified individual. To be considered qualified, the individual must know how to calibrate and operate the atmospheric monitoring instruments, interpret readings and alarms, and understand the instrument limitations.

The CSEP, APC, or NPC shall provide the frequency in which monitoring shall take place, the types of instruments to be used, and the substances to be monitored. All monitoring results shall be documented on the CSEP, APC, or NPC. Employees shall not enter a confined space until all monitoring requirements are completed.

The following requirements apply to atmospheric monitoring:



- Atmospheric monitoring equipment shall be field calibrated prior to use. The equipment manufacturer's periodic calibration recommendations shall be followed.
- Atmospheric monitoring must be completed in the following sequence:
  - Oxygen (percent O<sub>2</sub> by volume)
  - Flammability (percent of the lower explosive limit)
  - Toxic air contaminants (actual concentration)
  - Toxic dusts (actual concentration, if necessary)
- Atmospheric samples shall be taken from outside the space with sampling conducted bottom to top at five foot intervals. Gases and vapors have different vapor densities and will accumulate in different areas of the space.
- All monitoring results shall be documented on the CSEP, APC or NPC.
- Flammable and combustible vapors in concentrations greater than 10 percent of the LEL (5 percent in Australia) will require the use of continuous monitoring

#### **6.10 Pre-entry Briefing**

A pre-entry briefing specific to the confined space to be entered is required prior to entering that confined space. The entry supervisor shall conduct the briefing, and all entrants and attendants must attend. The briefing must include at least the following elements:

- An explanation of the work to be performed and any limitations
- An explanation of the actual and potential hazards of the confined space, including the possible behavioral effects and signs, symptoms, and consequences of exposure
- A review of the control measure requirements, communication and rescue procedures, and atmospheric monitoring requirements, as specified on the CSEP, APC, or NPC
- A review of the specific responsibilities of the entrants and attendant as specified in sections 3.5 and 3.6 respectively

Hands-on training shall be provided to employees that are not familiar with the use of relevant equipment.

#### **6.11 Self-Assessment Checklists**

The HS&E Self-Assessment Checklist – Confined-Space Entry, found in Attachment 7, is provided as a method for verifying compliance with established safe work practices, regulations, and industry standards pertaining to confined space entries. CH2M HILL's project SC shall use this checklist when (1) CH2M HILL employees enter confined spaces and/or (2) CH2M HILL oversight of a confined-space-entry subcontractor is required by the Subcontractor, Contractor, and Owner SOP (HSE-215). The HS&E staff shall specify the frequency in which this checklist shall be completed and provide this information in the project's written safety plan. The HS&E staff shall assist the SC in resolving any deficiencies identified during the self-assessment. This SOP may be used to clarify checklist questions.



## **6.12 Recordkeeping**

Canceled entry permits shall be retained for 1 year (5 years in Australia) by the responsible RHSPM or designee. Review of the canceled permits at the time of receipt or over a period of time shall determine if any improvements or changes are necessary to this SOP. The RHSPM or designee shall notify the HS&E Technical Lead of any concerns that should be addressed by the SOP from the review of the canceled permits.

Training certificates will be maintained for the duration of employment.

## **7.0 Attachments**

- Attachment 1: Relevant Regulatory Requirements
- Attachment 2: Subcontractor Safety Procedure Criteria – Confined-Space Entry
- Attachment 3: Confined-Space-Classification Flowchart
- Attachment 4: CH2M HILL Confined-Space-Entry Permit
- Attachment 5: CH2M HILL Confined-Space Alternate Procedure Certificate
- Attachment 6: CH2M HILL Confined-Space Nonpermit Certificate
- Attachment 7: HS&E Self-Assessment Checklist – Confined-Space Entry



**CH2MHILL**  
**Confined-Space Entry**  
**Standard of Practice HSE-203**

## **Attachment 1: Relevant Regulatory Requirements**

### **United States**

29 CFR1910.146, "Permit-Required Confined Spaces" (General Industry Standard)

29 CFR 1926.21, "Safety Training and Education" (Construction Standard)

The General Industry Standard technically applies only to general industry and not to the construction industry, except when construction is performed at industrial processes, including existing industrial facilities. However, the Occupational Safety & Health Administration (OSHA), is expected to enforce the General Industry Standard as the standard of practice for the construction industry by using the General Duty clause of the Occupational Safety and Health Act (OSH Act). This act holds employers responsible for safety standards or industry practices that they could or should have known about that protect employees from similar, known hazards.

Some State OSHA plans (WA, OR, CA) have excavation requirements that are more stringent than the federal requirements. Contact the Regional Health and Safety Program Manager (RHSPM) for state-specific information.

### **Australia**

#### Worksafe Australian National Standard

AS-2865 "Safe Working in a Confined Space"

All PPE must meet the requirements of Australian Standard AS 2626.

All respirator protective equipment shall be to Australian Standard AS/NZS 1716.

All ladders shall be to Australian Standard AS 1892.



**CH2MHILL**  
**Confined-Space Entry**  
**Standard of Practice HSE-203**

## **Attachment 2: Subcontractor Safety Procedure Criteria — Confined-Space Entry**

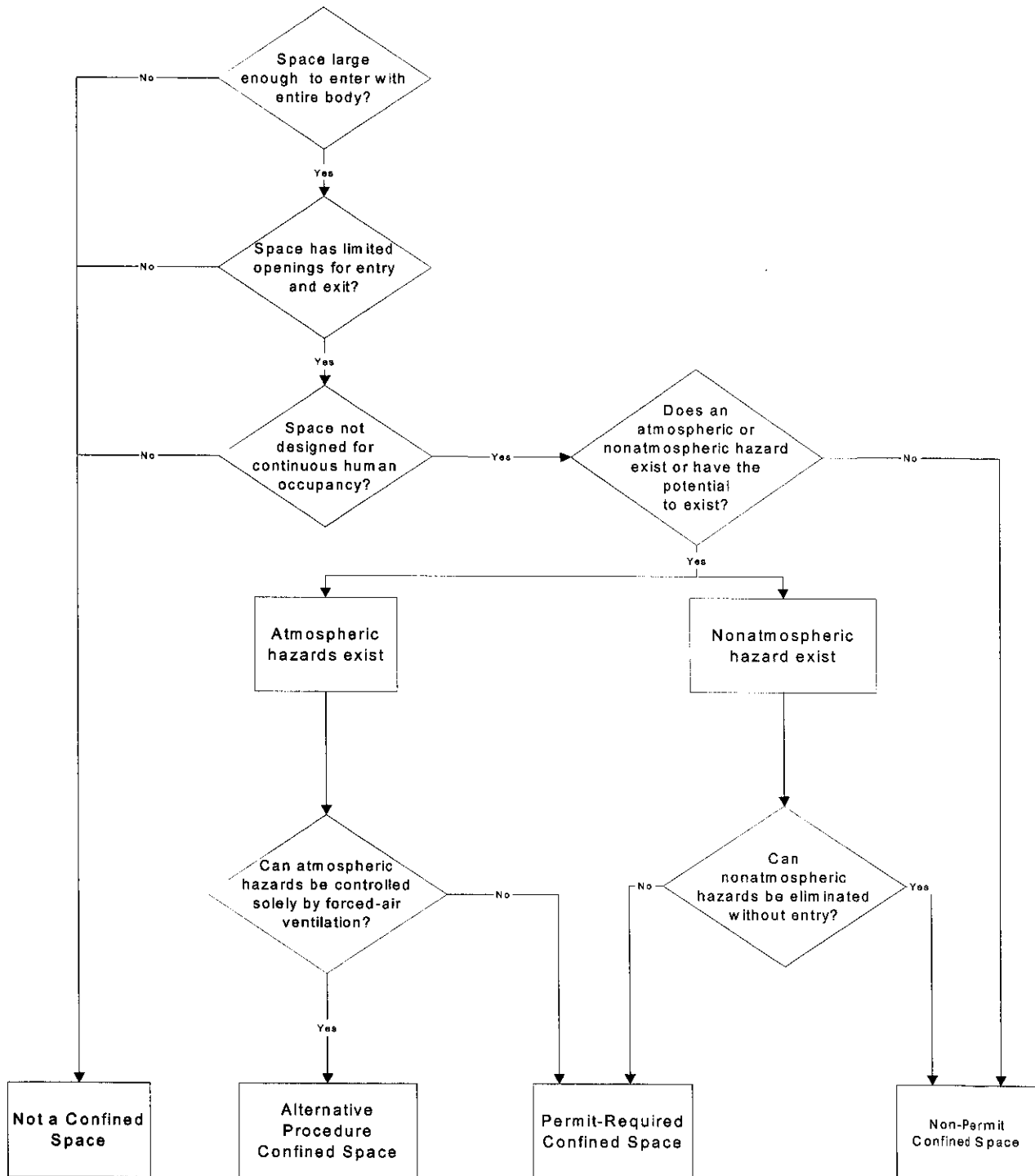
The following criteria are not intended to be all inclusive, but are provided as a tool to facilitate development and review of subcontractor safety procedures. Subcontractors are expected to address the following items in their safety procedures.

### **Minimum Acceptable Criteria for Subcontractor Confined-Space-Entry Procedures:**

1. Provide the name and qualifications of the confined-space-entry supervisor responsible for overseeing all confined-space-entry operations (years and type of experience, training background, etc.).
2. Describe the training requirements for confined space entrants and attendants.
3. Describe the responsibilities of the entry supervisor, attendants, and entrants.
4. Describe the methods used to classify confined spaces as permit-required, alternative-procedure, or nonpermit confined spaces.
5. Describe the methods used to isolate confined spaces from the release of energy and material.
6. Describe the methods and equipment used to ventilate confined spaces to provide acceptable safe entry conditions.
7. Describe the communication methods used between entrants and the attendant.
8. Describe the atmospheric monitoring instrumentation and procedure requirements (qualifications of tester, frequency of tests, instrumentation used, hazards monitored, and documentation of results).
9. Describe the methods used to perform confined-space rescue (non-entry retrieval equipment, internal rescue team qualifications, external rescue team assessment, communication and rescue procedures)
10. Describe the protective equipment used for confined-space entry.
11. Describe the pre-entry briefing requirements (frequency, items covered, attendance required).
12. Describe the methods used for alternative-procedure confined-space entry.
13. Provide the confined-space-entry permit and certificates to be used.



## Attachment 3: Confined-Space-Classification Flowchart



**Alternative Space Procedure for US use only. All other countries use permit-required procedures.**



1.0 GENERAL INFORMATION							
Project:			Project #:			PM:	
Date of Entry:		Duration of Entry:		Permit Expiration Date and Time:			
Space Location:							
Description of Space:							
Purpose of Entry:							
<b>Hazards Expected:</b> <input type="checkbox"/> Oxygen Deficiency <input type="checkbox"/> Oxygen Enrichment <input type="checkbox"/> Flammable Vapors <input type="checkbox"/> Temperature Extremes <input type="checkbox"/> Entrapment <input type="checkbox"/> Engulfment <input type="checkbox"/> Fall <input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical <input type="checkbox"/> Chemical <input type="checkbox"/> Pressure <input type="checkbox"/> Combustible Dust <input type="checkbox"/> Toxics (specify): <input type="checkbox"/> Others (specify):							
Entry Supervisor (ES):				Attendant(s):			
2.0 CONTROL MEASURE REQUIREMENTS							
<b>Communication:</b> <input type="checkbox"/> Visual <input type="checkbox"/> Voice <input type="checkbox"/> Radio <input type="checkbox"/> Cell Phone <input type="checkbox"/> Other (specify):							
<b>Cleaning:</b> <input type="checkbox"/> None <input type="checkbox"/> Purging <input type="checkbox"/> Inerting <input type="checkbox"/> Flushing						Date/Time Completed:	
<b>Isolation:</b> <input type="checkbox"/> None <input type="checkbox"/> Lockout/Tagout <input type="checkbox"/> Line Breaking <input type="checkbox"/> Blinding/Blanking <input type="checkbox"/> Double Block & Bleed <input type="checkbox"/> Other (specify):						Date/Time Completed:	
<b>Ventilation:</b> <input type="checkbox"/> None <input type="checkbox"/> Prior to Entry <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify frequency): <input type="checkbox"/> Type (specify):						Date/Time Completed:	
<b>Protective Equipment:</b> <input type="checkbox"/> GFCI <input type="checkbox"/> Low-voltage Lighting: <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Fall Protection <input type="checkbox"/> First Aid Kit <input type="checkbox"/> Respirators (specify): Other (specify):							
<b>Rescue Equipment:</b> <input type="checkbox"/> Harness <input type="checkbox"/> Lifeline <input type="checkbox"/> Tripod <input type="checkbox"/> Retrieval Device <input type="checkbox"/> Other (specify):							
<b>Other Requirements:</b> <input type="checkbox"/> Hot Work Permit <input type="checkbox"/> Other (specify):							
3.0 RESCUE AND EMERGENCY PROCEDURES							
4.0 ATMOSPHERIC MONITORING							
<b>Frequency:</b> <input type="checkbox"/> Prior to Each Entry <input type="checkbox"/> Prior to Shift <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify):							
<b>Instruments:</b> <input type="checkbox"/> Combustible Gas Indicator <input type="checkbox"/> FID <input type="checkbox"/> PID <input type="checkbox"/> Colorimetric Tubes <input type="checkbox"/> CO Monitor <input type="checkbox"/> H <sub>2</sub> S Monitor <input type="checkbox"/> Other(specify):							
<b>Substances Monitored:</b> <input checked="" type="checkbox"/> Oxygen <input checked="" type="checkbox"/> Flammables <input type="checkbox"/> CO <input type="checkbox"/> H <sub>2</sub> S <input type="checkbox"/> Other (specify):							
Monitoring Results			Oxygen	Flammability	Toxicity		
Monitors	Limits		19.5 – 23.5 %	< 10 % of LEL	< PEL/TLV		
Initials	Date	Time	%	% of LEL	Substance	Level	Limit
5.0 PERMIT APPROVAL, AUTHORIZATION, AND CANCELLATION							
			Signature		Employee Number	Date	Time
HS&E Approval							
ES Permit Authorized							
ES Permit Canceled							
Problems Encountered During Entry							



## Page 2 of 2

The following individuals have successfully completed confined-space training, have attended a pre-entry briefing, and are authorized to enter the space.

2



# CH2MHILL

## CH2M HILL Confined-Space Alternative Procedure Certificate

Alternative procedures may be used for permit-required confined-space entry if the only hazard within the space is an atmospheric hazard and the hazard can be controlled to acceptable safe levels solely by forced-air ventilation. If the space must be entered to determine hazards, the initial entry must be done in full compliance with the requirements of a confined-space-entry permit.

These alternative procedures are valid as long as the atmospheric hazards are controlled by forced-air ventilation. If additional hazards arise within the space, or the forced-air ventilation is inadequate in controlling the atmospheric hazard, personnel must exit the space immediately and the space must be reevaluated.

1.0 GENERAL INFORMATION							
Project:			Project #:			PM:	
Date of Entry:		Duration of Entry:			Certification Expiration Date:		
Space Location:							
Description of Space:							
Purpose of Entry:							
Atmospheric Hazards Expected: <input type="checkbox"/> Oxygen Deficiency <input type="checkbox"/> Oxygen Enrichment <input type="checkbox"/> Flammable Vapors <input type="checkbox"/> Toxics (specify):							
Entry Supervisor (ES):				Attendant(s):			
2.0 CERTIFICATE REQUIREMENTS							
<input type="checkbox"/> Nonatmospheric hazards do not exist in this space							
<input type="checkbox"/> Communication methods established between entrants and the attendant							
<input type="checkbox"/> Covers can be removed safely							
<input type="checkbox"/> Space openings guarded from fall hazards and falling objects							
<input type="checkbox"/> Continuous forced-air ventilation from a clean air source is positioned in the immediate area where entrants are working and continue until they have left the space							
3.0 ATMOSPHERIC MONITORING							
Frequency: <input type="checkbox"/> Prior to Entry <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify):							
Instruments: <input type="checkbox"/> Combustible Gas Indicator <input type="checkbox"/> FID <input type="checkbox"/> PID <input type="checkbox"/> Colorimetric Tubes <input type="checkbox"/> CO Monitor <input type="checkbox"/> H <sub>2</sub> S Monitor <input type="checkbox"/> Other(specify):							
Substances Monitored: <input type="checkbox"/> Oxygen <input type="checkbox"/> Flammables <input type="checkbox"/> CO <input type="checkbox"/> H <sub>2</sub> S <input type="checkbox"/> Other (specify):							
Monitoring Results			Oxygen	Flammability	Toxicity		
Monitors	Limits		19.5 – 23.5 %	< 10 % of LEL	< PEL/TLV		
Initials	Date	Time	%	% of LEL	Substance	Level	Limit
4.0 CERTIFICATE AUTHORIZATION AND CANCELLATION							
		Entry Supervisor Signature			Employee Number	Date	Time
Entry Authorized							
Entry Canceled							
Problems Encountered During Entry							



## Page 2 of 2

The following individuals have successfully completed confined-space training, have attended a pre-entry briefing, and are authorized to enter the space.

[illegible]



# CH2MHILL

## CH2M HILL Confined-Space Nonpermit Certificate

This nonpermit certificate may be used for confined spaces that pose no actual or potential atmospheric hazard above acceptable safe levels and if all nonatmospheric hazards can be eliminated without entry into the space. If the space must be entered to eliminate nonatmospheric hazards, the initial entry must be done in full compliance with the requirements of a confined-space-entry permit. If an atmospheric or nonatmospheric hazard is observed, personnel must exit the space immediately and the space must be reevaluated.

1.0 GENERAL INFORMATION															
Project:				Project #:				PM:							
Date of Entry:				Duration of Entry:				Certification Expiration Date:							
Space Location:															
Description of Space:															
Purpose of Entry:															
Entry Supervisor:								Attendant(s):							
2.0 CERTIFICATE REQUIREMENTS															
<input type="checkbox"/> Actual or potential atmospheric hazard above acceptable safe levels do not exist in this space															
<input type="checkbox"/> Nonatmospheric hazards do not exist in this space or have been eliminated without entry															
<input type="checkbox"/> Communication methods established between entrants and the buddy or attendant															
<input type="checkbox"/> Entrants are informed to exit the space if any hazard is observed															
3.0 ATMOSPHERIC MONITORING															
Frequency: <input type="checkbox"/> Prior to Entry <input type="checkbox"/> Continuous <input type="checkbox"/> Periodic (specify):															
Instruments: <input type="checkbox"/> Combustible Gas Indicator <input type="checkbox"/> FID <input type="checkbox"/> PID <input type="checkbox"/> Colorimetric Tubes <input type="checkbox"/> CO Monitor <input type="checkbox"/> H <sub>2</sub> S Monitor															
<input type="checkbox"/> Other(specify):															
Substances Monitored: <input type="checkbox"/> Oxygen <input type="checkbox"/> Flammables <input type="checkbox"/> CO <input type="checkbox"/> H <sub>2</sub> S <input type="checkbox"/> Other (specify):															
Monitoring Results			Oxygen		Flammability		Toxicity								
Monitors	Limits		19.5 – 23.5 %		< 10 % of LEL		< PEL/TLV								
Initials	Date	Time	%	% of LEL	Substance			Level		Limit					
4.0 CERTIFICATE AUTHORIZATION AND CANCELLATION															
		Entry Supervisor Signature						Employee Number		Date		Time			
Entry Authorized															
Entry Canceled															
5.0 AUTHORIZATION/ACCOUNTABILITY LOG															
The following individuals have successfully completed confined-space training, have attended a pre-entry briefing, and are authorized to enter the space.															
Name of Entrant		ES Initials		Attendant - check each time an individual enters or exits the space.											
		Trained	Briefed	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
Problems Encountered During Entry															



# CH2MHILL

## HS&E Self-Assessment Checklist – CONFINED-SPACE-ENTRY

Page 1 of 4

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: 1) CH2M HILL employees will enter confined spaces, and/or 2) CH2M HILL provides oversight of a subcontractor performing confined-space entry.

SC may consult with subcontractors performing confined-space entry when completing this checklist, but shall not direct the means and methods of forklift operations nor direct the details of corrective actions. Subcontractors performing confined-space entry shall determine how to correct deficiencies, and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_  
Location: \_\_\_\_\_ PM: \_\_\_\_\_  
Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to (check only one of the boxes below):

- ☐ Evaluate CH2M HILL performance of confined-space entries  
☐ Evaluate a CH2M HILL subcontractor's compliance with its confined-space-entry program  
Subcontractor's Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete or correct.
- Check "No" if an item is incomplete or deficient. Section 2 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-203.

	Yes	No	N/A	N/O
<b>SECTION 1</b>				
<b>CONFINED-SPACE EVALUATION (6.1)</b>				
1. Personnel informed of location and hazards of existing confined spaces (danger signs, verbal)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Determination made that work can not be completed without entering the confined space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Information obtained regarding the space (blue prints, potential hazards, energy sources)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Spaces classified as permit-required, alternative-procedure, or nonpermit confined spaces	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>TRAINING (6.2)</b>				
5. Entrants, Attendants, and Entry Supervisor have completed confined-space-entry training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Employees performing lockout/tagout procedures have completed LOTO training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Employees required to wear respirators have completed respiratory-protection training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>CONFINED-SPACE ENTRY (6.3)</b>				
8. Completed permit or certificate posted at space entrance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Pre-entry briefing conducted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Entrants/Attendants verify that entry supervisor has authorized entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Entrants/Attendants verify that all requirements of the permit or certificate have been satisfied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Atmospheric monitoring is conducted at frequency provided on the permit or certificate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Entry not permitted if an atmospheric hazard is detected above acceptable safe levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Entrants evacuate space upon orders of the attendant or entry supervisor, when an alarm is sounded, or when a prohibited condition or dangerous situation is recognized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Entrants/Attendant informs entry supervisor of hazards confronted or created in the space or any problems encountered during entry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Entry supervisor informs the owner of such issues in item 15 above	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



<u>SECTION 1 (continued)</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
<b>ENTRY UNDER A CONFINED-SPACE-ENTRY PERMIT (CSEP) (6.4)</b>				
17. CSEP completed by entry supervisor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. All expected hazards listed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Entry supervisor and Attendant assigned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Communication methods established between entrants and the attendant (6.7.1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Cleaning requirements identified (6.7.2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Isolation requirements identified (6.7.3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Ventilation requirements identified (6.7.4)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Protective equipment requirements identified (6.7.5)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Rescue equipment requirements identified (6.7.6)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Other requirements identified (6.7.7)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Rescue and emergency procedures identified (6.8)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Atmospheric monitoring requirements identified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. HS&E manager approve use by signing (CH2M HILL CSEP only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Entry supervisor authorized entry by signing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Authorized entrants have completed CSE training and attended pre-entry briefing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Only authorized entrants permitted to enter the space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Entry supervisor sign the CSEP indicating its cancellation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Problems encountered during the entry listed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>ENTRY UNDER AN ALTERNATIVE-PROCEDURE CERTIFICATE (APC) (6.5)</b>				
35. APC completed by entry supervisor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. All expected atmospheric hazards listed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Entry supervisor and Attendant assigned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Entry supervisor verifies that nonatmospheric hazards do not exist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Communication methods established between entrants and the attendant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Covers removed safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Openings guarded from both fall hazards and from objects entering the space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Continuous forced-air ventilation positioned to ventilate the immediate areas where employees are working and continue until they have left the space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Ventilation from a clean source of air	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Atmospheric monitoring requirements identified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Entry supervisor authorize entry by signing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Authorized entrants have completed CSE training and attended pre-entry briefing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Only authorized entrants permitted to enter the space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Entry supervisor sign the APC indicating its cancellation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Problems encountered during the entry listed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>ENTRY UNDER A NONPERMIT CERTIFICATE (NPC) (6.6)</b>				
50. NPC completed by entry supervisor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Entry supervisor assigned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. Attendant or buddy assigned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. Buddy remains in the space with the entrant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. Entry supervisor verifies nonatmospheric hazards do not exist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. Communication methods established between entrants and attendant or buddy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. Entrants informed to exit the space immediately if hazards are observed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57. Atmospheric monitoring requirements identified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58. Entry supervisor authorizes entry by signing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
59. Authorized entrants have completed CSE training and attended pre-entry briefing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60. Only authorized entrants permitted to enter the space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
61. Entry supervisor shall sign the NPC indicating its cancellation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62. Problems encountered during the entry shall be listed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	<u>SECTION 1 (continued)</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
<b>RESCUE (6.8)</b>					
63. Entrants wearing body harness with attached retrieval line (lifeline)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
64. Other end of lifeline attached to retrieval device (when required) or fixed point outside space		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
65. Mechanical retrieval device positioned at access point for vertical-type spaces > 5 feet deep		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
66. Rescue team established		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
67. Team members have completed confined-space-entry training		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
68. Team members informed of the hazards that they may confront during rescue operations		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
69. PPE & rescue equipment necessary to conduct safe entry-rescue provided & readily available		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
70. Team members trained on rescue duties and proper use of PPE and rescue equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
71. All team members trained in first aid & CPR, at least one member holding a current certification		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
72. Team has made simulated rescue from a space of similar configuration within last 12 months		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
73. Communication established & tested between the team & entrants, and emergency provider		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
74. Local emergency medical provider notified in advance of entries into PRCS		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>ATMOSPHERIC MONITORING (6.9)</b>					
75. Qualified individual conducts atmospheric monitoring		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
76. Monitoring results documented on permit or certificate		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
77. Entrants do not enter until all monitoring requirements are completed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
78. Monitoring equipment calibrated prior to use		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
79. Monitoring conducted for oxygen, flammability, and toxic air contaminants		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
80. Monitoring conducted bottom to top at five foot intervals		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PREENTRY BRIEFING (6.10)</b>					
81. Entry supervisor conducts the briefing and discusses the follow items:		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
82. Explanation of the work to be performed and limitations		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
83. Explanation of actual and potential hazards, including the possible behavioral effects and signs, symptoms, and consequences of exposure		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
84. Review of the control measure and atmospheric monitoring requirements, as specified on permit or certificate		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
85. Review of entrant and attendant responsibilities		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
86. Hands-on training provided on unfamiliar equipment.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Complete this section for all items checked "No" in Section 1. Deficient items must be corrected in a timely manner.

[illegible]

Auditor: \_\_\_\_\_ Project Manager: \_\_\_\_\_



# **CH2MHILL**

## **Stairways and Ladders Standard of Practice HSE-214**

### **1.0 Applicability and Scope**

#### **1.1 Applicability**

This Standard of Practice (SOP) applies to the following personnel: CH2M HILL employees who use stairways and ladders, and CH2M HILL Safety Coordinators (SCs) who may be responsible for providing oversight of subcontractor personnel who are using stairways and ladders, or both.

#### **1.2 Scope**

This SOP provides information regarding stairway and ladder usage during construction and general industry activities. CH2M HILL employees must recognize stairway and ladder hazards and be aware of safe work practices and regulatory requirements associated with the use of stairways and ladders.

As described in the ““Subcontractor, Contractor, and Owner” SOP HSE-215, the subcontract terms and conditions expressly define responsibilities for health, safety, and environmental protection (HS&E), and CH2M HILL's HS&E practices in the field are determined by these defined responsibilities. Consistent with HSE-215, subcontractors must provide proper stairways and ladders, must determine how to work safely and in compliance with applicable HS&E regulations and industry standards, and must determine how to correct deficiencies. CH2M HILL employees shall not direct the means and methods of using stairways and ladders nor direct the details of corrective actions.

#### **1.3 Regulatory Review**

Occupational Safety and Health Administration (OSHA) 29 CFR 1926, Subpart X (Stairways and Ladders), contains regulatory requirements specific to stairway and ladder usage during construction activities.

OSHA 29 CFR 1910, Subpart D (Walking-Working Surfaces), contains regulatory requirements specific to stairway and ladder usage during general industry activities.

### **2.0 Project Planning**

#### **2.1 Training Requirements**

CH2M HILL employees using stairways and ladders are required to complete either the computer-based stairways, ladders, and scaffolding module or the 10-Hour Construction Safety Awareness training course.

Subcontractors who use stairways and ladders are responsible for complying with all applicable HS&E training requirements and for providing the training necessary to complete their tasks safely.



## **2.2 Medical Surveillance Requirements**

There are no medical surveillance requirements specific to stairway and ladder usage.

## **2.3 Competent Person Requirements**

Subcontractors whose personnel are using ladders shall provide a competent person to periodically inspect ladders for visible defects. The competent person shall have knowledge of the requirements of OSHA ladder standards and shall be capable of identifying hazards and have the authority to take corrective actions to eliminate these hazards.

The SC shall act as CH2M HILL's competent person and inspect all CH2M HILL project ladders.

## **2.4 Safety Equipment**

Subcontractors are responsible for providing stairways and ladders for access and egress as necessary for its personnel. CH2M HILL will provide ladders only for its own employees. Other safety equipment will be provided as delineated in the subcontract and referenced documents.

- Materials to construct guardrail systems may be required on unprotected stairway and ladder landing surfaces.
- Fall protection equipment (full body harnesses and lanyards) may be required when personnel are working from ladders or unprotected edges of stairway and ladder landings.
- Ladder safety devices or self-retracting lifelines may be required for climbing fixed ladders greater than 24 feet.

## **2.5 Subcontractor Selection**

Subcontractors are selected as described in the "Subcontractor, Contractor, and Owner" SOP HSE-215. The "Subcontractor Safety Procedure Criteria – Stairways and Ladders" found in Attachment 1 provides the minimum criteria for stairways and ladders procedures. These criteria shall be used by the HS&E staff in reviewing subcontractor stairways and ladders procedures submitted when CH2M HILL oversight is required by SOP HSE-215.

## **2.6 Planning Activities**

Access to elevated working surfaces shall be identified so that appropriate resources and equipment can be provided to the project.

Subcontractor training shall be verified prior to the start of field operations.

## **3.0 Project Execution**

### **3.1 Safe Work Practices**

The requirements of this section are to be followed by CH2M HILL employees who are using stairways and ladders, regardless of the company controlling access and egress. These requirements also pertain to subcontractor personnel who are using stairways and ladders when CH2M HILL is providing oversight.



#### Stairways:

- Personnel should avoid using both hands to carry objects while on stairways; if unavoidable, use extra precautions.
- Personnel shall not use pan and skeleton metal stairs until permanent or temporary treads and landings are provided the full width and depth of each step and landing.

#### Ladders:

- Ladders shall be inspected by a competent person on a periodic basis and after any occurrence that could affect their safe use. Ladders found to be defective shall be tagged and removed from service until repaired.
- Ladders shall be used only for the purpose for which they were designed and shall not be loaded beyond their rated capacity.
- Only one person at a time shall climb on or work from an individual ladder.
- Personnel climbing ladders shall face the ladder and maintain at least three points of contact with the ladder.
- Personnel shall not carry tools, materials, and equipment while climbing ladders. Tag lines shall be used adjacent to ladders for the purpose of carrying tools, materials and equipment.
- Ladders shall not be moved, shifted, or extended while in use.
- Stepladders shall be used only in the fully opened and locked position.
- Stepladder tops and top steps shall not be used as a step.
- Stepladder cross-bracing shall not be used for climbing.
- Fall protection should be considered when personnel are working from extension, straight, or fixed ladders greater than six feet from lower levels and both hands are needed to perform the work, or when reaching or working outside of the plane of ladder side rails.

### 3.2 Regulations and Industry Standards

This section provides the minimum regulatory and industry standard requirements pertaining to stairways and ladders.

As described in the "Subcontractor, Contractor, and Owner" SOP HSE-215, CH2M HILL's project SC may be required to provide oversight of subcontractor personnel who are using stairways and ladders. This section is also provided to inform the SC of established stairways and ladders regulations and industry standards so that an appropriate level of oversight may be provided. Subcontractors retain control over their practices and are responsible and accountable for implementing these requirements, as well as requirements established in their own safety procedures. CH2M HILL's oversight does not relieve subcontractors of their own responsibility for effective implementation and enforcement of HS&E requirements.



### **3.2.1 Stairways and Ladders: General**

The following general requirements apply to all stairways and ladders:

- A stairway or ladder shall be provided at points of access where there is a break in elevation of 19 inches or more and no ramp, runway, embankment, or personnel hoist is provided.
- If there is only one point of access between levels, it shall be kept clear to permit free passage by personnel. If passage becomes restricted, a second point of access shall be provided and used. If there are more than two points of access between levels, at least one point of access shall be kept clear at all times.

### **3.2.2 Stairway: Design and Construction**

The following requirements apply to all stairways:

- Stairways shall be maintained free of slippery conditions and dangerous projections such as protruding nails.
- Stairways shall be installed between 30 and 50 degrees from the horizontal and riser height, and tread depth shall be uniform for each flight of stairs, including any foundation structure used as a step.
- Landings, at least 30 inches deep and 22 inches wide, shall be provided at every 12 feet or less of vertical rise. When doors or gates open directly onto a stairway, a landing shall be provided that extends at least 20 inches beyond the swing of the door.

The following requirements apply to stairways having four or more risers or rising more than 30 inches:

- A stair rail shall be installed along each unprotected side or edge to prevent personnel from falling to lower levels. The top rail shall be at least 36 inches from the surface of the stair tread.
- At least one handrail shall be installed to provide personnel with a handhold for support. Handrails shall be between 30 and 37 inches from the surface of the tread and have a minimum clearance of 3 inches between the handrail and any wall or other object. When the top rail of a stair rail also serves as a handrail, the top rail shall be between 36 and 37 inches from the surface of the tread.
- Top rails and handrails shall be capable of withstanding a 200-pound force applied in any downward or outward direction, be surfaced to prevent laceration injuries or cloth snagging, and be constructed so the rail ends do not create a projection hazard.
- Mid-rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top rail and treads.
- A guardrail shall be installed along each unprotected side or edge of a landing to prevent personnel from falling to lower levels. The guardrail shall consist of a top rail 39 to 45 inches above the landing, capable of withstanding a 200-pound force applied in any downward or outward direction, and mid-rails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members provided between the top rail and the landing.



### **3.2.3 Ladders: General**

The following requirements apply to all portable and fixed ladders:

- Ladder components shall be surfaced to prevent injury from punctures or lacerations and to prevent snagging of clothing.
- Ladders shall be maintained free of oil, grease, and other slipping hazards.
- The area around the top and bottom of the ladders shall be kept free of obstructions.

### **3.2.4 Portable Ladders: Design and Construction**

The following requirements apply to all portable ladders or as indicated:

- Only ladders approved by the American National Standards Institute (ANSI) shall be used; approved ladders can be identified by the ANSI label on the side rail.
- Ladder rungs and steps shall be parallel, level, and uniformly spaced.
- Ladders shall not be tied or fastened together to create longer sections unless they are specifically designed for such use.
- Ladders shall have nonconductive side rails if they are used where the ladder could contact exposed energized electrical equipment.
- Extension ladders shall be equipped with positive section stops.
- Stepladders shall be provided with a metal spreader or locking device to hold the front and back sections in an open position when the ladder is in use.
- Wood ladders shall not be coated with any opaque covering, except for identification or warning labels.
- A double-cleated ladder or two or more ladders shall be provided when ladders are the only way to enter or exit a work area for 25 or more employees, or when a ladder serves simultaneous two-way traffic.
- When two or more separate ladders are used to reach an elevated work area they shall be offset with a landing between the ladders, except when portable ladders are used to gain access to fixed ladders.

### **3.2.5 Portable Ladders: Positioning**

The following requirements apply to all portable ladders or as indicated:

- Ladders shall be used only on stable and level surfaces unless secured to prevent accidental movement.
- Ladders placed in areas such as passageways and doorways, or where they can be displaced by workplace activities, shall be secured to prevent accidental movement, or a barricade shall be used to keep activities away from the ladder.
- Extension ladders less than 36 feet shall have their sections overlap by 3 feet, ladders 36 to 48 feet shall overlap 4 feet, and ladders over 48 feet shall overlap 5 feet.
- Extension and straight ladders shall be placed with both side rails supported equally.



- Extension and straight ladders shall be used at an angle (approximately 75 degrees) such that the horizontal distance from the top support to the front of the ladder is approximately one-quarter of the working length of the ladder.
- Extension and straight ladders used to gain access to elevated landings shall extend 3 feet above the landing surface. When such an extension is not possible because of the ladder's length, then the ladder shall be secured at its top to a rigid support and a grasping device, such as a grabrail shall be provided to assist personnel in mounting and dismounting the ladder.

### **3.2.6 Fixed Ladders: Design and Construction**

The following clearance distances shall be maintained for all fixed ladders:

- Minimum distance between rungs and obstructions behind the ladder shall be 7 inches.
- Minimum distance between rungs and obstructions on the climbing side of the ladder shall be 30 inches. This distance may be reduced to 24 inches from unavoidable obstructions provided a deflection device is installed to guide personnel around the obstruction.
- Minimum distance between centerline of rungs and obstructions to the side of ladders without cages or wells shall be 15 inches.
- Step across distance between top rung and the ladder landing shall be between 7 and 12 inches.

The following fall protection devices shall be available for climbing all fixed ladders:

- Side rails shall extend 42 inches above the top of the landing platform and be flared to provide between 24 and 30 inches of clearance between the side rails.
- If the length of climb is less than 24 feet and the top of the ladder is less than 24 feet above lower levels, no fall protection is required.
- If the length of climb is less than 24 feet and the top of the ladder is greater than 24 feet above lower levels, cages, wells, ladder safety devices, or self-retracting lifelines are required.
- If the length of climb is greater than 24 feet, ladder safety devices, self-retracting lifelines with rest platforms every 150 feet, or a cage or well with landing platforms and multiple ladder sections every 50 feet are required.

The following requirements apply to ladder safety devices:

- Devices shall allow personnel to climb the ladder without continually having to hold, push, or pull the device, leaving both hands free for climbing.
- Devices shall activate within 2 feet after a fall occurs.
- The connector between the lifeline and harness attachment point shall be equal to or less than 9 inches.

### **3.3 Forms and Permits**

No CH2M HILL forms or permits are required for stairway and ladder usage.



Subcontractors may have written procedures or permits governing stairway and ladder usage. CH2M HILL employees using subcontractor's stairways and ladder shall comply with these procedures and permits.

### **3.4 Self-Assessment Checklists**

The "HS&E Self-Assessment Checklist—Stairways and Ladders", found in Attachment 2, is provided as a method of verifying compliance with established safe work practices, regulations, and industry standards pertaining to stairways and ladders. CH2M HILL's project SC shall use this checklist when either CH2M HILL employees are using stairways and ladders, or CH2M HILL provides oversight of subcontractor personnel who are using stairways and ladders, or both, as required by the "Subcontractor, Contractor, and Owner" SOP HSE-215. The HS&E staff shall specify the frequency in which this checklist shall be completed, and provide this information in the project's written safety plan. Completed checklists shall be sent to the HS&E staff for review. The HS&E staff shall assist the SC in resolving any deficiencies identified during the self-assessment. This SOP may be used to clarify checklist questions.

## **4.0 Attachments**

Attachment 1: Subcontractor Safety Procedure Criteria—Stairways and Ladders

Attachment 2: HS&E Self-Assessment Checklist—Stairways and Ladders



# **CH2MHILL**

## **Stairways and Ladders**

### **Standard of Practice HSE-214**

## **Attachment 1: Subcontractor Safety Procedure Criteria— Stairways and Ladders**

The following criteria are not intended to be all-inclusive, but are provided as a tool to facilitate development and review of subcontractor procedures for the use of stairways and ladders. Subcontractors are expected to address the following items in their safety procedures.

### **Minimum Acceptable Criteria for Subcontractor Stairway and Ladder Procedures:**

1. Provide name and qualifications (years of experience, training background, etc.) of the "competent person" responsible for inspection and use of stairways and ladders.
2. Describe ladder inspection criteria or procedures (frequency of inspections per work shift, as needed throughout day; visual versus written inspections; items that are inspected).
3. Describe the methods used to inform personnel that ladders are damaged or otherwise unsafe for use (tags, verbal notification, out-of-service notice).
4. Provide a list of work areas and activities where stairway and ladder usage is anticipated on this project.
5. Describe the types of ladders (extension, portable, step, fixed, etc.) to be used.
6. Describe the safe work practices for positioning, climbing, and working from stairways and ladders.
7. Describe the safe work practices for alternate means of providing access and egress to work areas (aerial lifts, scaffolds, fall protection, etc.).
8. Describe the anticipated activities and methods of using fall protection in conjunction with stairways and ladders, as needed.
9. If job-made ladders will be used, describe specifications and industry standards (OSHA, ANSI, etc.) used in their construction.



# CH2MHILL

## HS&E Self-Assessment Checklist—STAIRWAYS AND LADDERS

Page 1 of 3

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: (1) CH2M HILL employees are using stairways and ladders and/or (2) CH2M HILL provides oversight of subcontractor personnel who are using stairways and ladders.

SC may consult with subcontractors when completing this checklist, but shall not direct the means and methods of stairway and ladder use nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected. Completed checklists shall be sent to the HS&E Staff for review.

Project Name: _____	Project No.: _____
Location: _____	PM: _____
Auditor: _____	Title: _____ Date: _____
This specific checklist has been completed to:	
<input type="checkbox"/> Evaluate CH2M HILL employee use of stairways and ladders	
<input type="checkbox"/> Evaluate a CH2M HILL subcontractor's compliance with stairway and ladder requirements	
Subcontractors Name: _____	

- Check "Yes" if an assessment item is complete/correct.
  - Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked "No."
  - Check "N/A" if an item is not applicable.
  - Check "N/O" if an item is applicable but was not observed during the assessment.
- Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-214.

<b>SECTION 1</b>		<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
<b>PERSONNEL SAFE WORK PRACTICES (3.1)</b>					
1.	CH2M HILL employees have completed stairway and ladder training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Carrying objects on stairs with both hands is avoided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Pan and skeleton metal stairs not used until permanent or temporary treads/landings provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Ladders periodically inspected for defects by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Defective ladders tagged and removed from service until repaired	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Ladders used only for purpose for which they were designed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Ladders not loaded beyond their rated capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Only one person simultaneously climbing or working from an individual ladder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Personnel face ladder when climbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Personnel climbing ladders maintain 3 points of contact with ladder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Personnel not carrying tools, materials, or equipment while climbing. Tag lines used.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Ladders not moved, shifted or extended while in use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Stepladders used in open and locked position only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Stepladders top and top step not used as a step	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Stepladders cross-bracing not used for climbing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16.	Fall protection considered when working from ladders over 6'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	Yes	No	N/A	N/O
<b>SECTION 2</b>				
<b>STAIRWAYS AND LADDERS: GENERAL (3.2.1)</b>				
17. Stairways or ladders provided at breaks in elevation $\geq$ 19 inches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. At least one clear access point provided to elevated levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>STAIRWAY: DESIGN AND CONSTRUCTION (3.2.2)</b>				
19. Stairways maintained free of slippery conditions and dangerous projections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Stairways installed between 30 - 50 degrees with uniform risers and treads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Landings (30" deep x 22" wide) provided every 12' of vertical rise.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Landings extend $\geq$ 20" beyond swing of any doors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Adequate stair rails installed at each unprotected side or edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Handrails installed as handhold for support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Mid-rails, screens, mesh, or intermediate members installed between top rail and treads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Adequate guardrails installed at each unprotected side or edge of a landing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>LADDERS: GENERAL (3.2.3)</b>				
27. Ladder components surfaced to prevent injury from puncture, laceration, or snagging clothing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Ladders maintained free of oil, grease, and other slipping hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. The area around the top and bottom of ladders kept free of obstructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PORTABLE LADDERS: DESIGN AND CONSTRUCTION (3.2.4)</b>				
30. Only ANSI approved portable ladders used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Rungs and steps are parallel, level, and uniformly spaced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Ladders not tied or fastened together to create longer sections unless designed for such use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Ladders with non-conductive side rails used near energized electrical equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Extension ladders equipped with positive section stops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. Stepladders provided with metal spreader or locking device to hold open when in use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Wood ladders not coated with opaque covering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Double-cleated or two ladders provided if $>$ 25 personnel use ladders as only means of access, or when ladder serves simultaneous two-way traffic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Two or more ladders used to reach elevated work areas offset with platform or landing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PORTABLE LADDER: POSITIONING (3.2.5)</b>				
39. Ladders used only on stable, level, surfaces unless secured to prevent movement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Ladders placed in areas where they can be displaced by work activities, secured or barricaded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Extension ladder section overlap adequate distance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Extension and straight ladders placed with both side rails supported equally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Extension and straight ladders positioned at approximately 75 degree angle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Ladders extend 3' above upper landings or are secured at top	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>FIXED LADDERS: DESIGN AND CONSTRUCTION (3.2.6)</b>				
45. Adequate clearances from obstructions maintained behind, in front, and to side of ladder rungs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Ladder step across distance at access point 7-12"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Side rails extend 42" above landing platform	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Cages, wells, ladder safety devices, or self-retracting lifelines used for ladders $>$ 24'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Ladder safety devices operate without the use of hands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. Ladder safety devices activate within 2' after a fall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. Connection between lifeline and harness attachment point $\leq$ 9"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



### SECTION 3

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

[illegible]

Auditor: \_\_\_\_\_ Project Manager: \_\_\_\_\_





## **BloodBorne Pathogens**

### **Enterprise Standard Operating Procedure HSE&Q-202**

#### **1.0 Purpose**

This Enterprise HSE&Q Standard Operating Procedure (SOP) describes the requirements that CH2M HILL Legal Entities and Business Groups (BGs) must comply with to limit exposure to blood and other potentially infectious materials to prevent transmission of bloodborne pathogens (BBP) such as hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

#### **1.1 References**

The following regulations were referenced to prepare this Enterprise SOP:

- U.S. Department of Labor, Occupational Safety and Health Administration (OSHA): 29 CFR 1910.1030, Bloodborne Pathogens

#### **2.0 Scope and Application**

##### **2.1 Scope**

This SOP describes the requirements for implementing a bloodborne pathogens exposure control plan, training and informing employees, and offering HBV vaccine and confidential medical examinations to exposed or potentially exposed employees.

##### **2.2 Application**

This SOP applies Enterprise-wide to all CH2M HILL Legal entities and Business Groups, and subcontractors and their lower-tier subcontractors that operate in the United States (US) and internationally, where employees could reasonably come in contact with blood or other potentially infectious materials.

This Enterprise SOP applies when:

- CH2M HILL Employees are expected to render first aid as a collateral duty in response to injuries resulting from workplace incidents, regardless of the company responsible for the operation (CH2M HILL, subcontractor, or third-party contractor).

Where state OSHA agencies may have more stringent requirements, contact the appropriate Responsible Health and Safety Manager (RHSM) from the business group (BG) to address these specific requirements.

For international operations, this SOP should be followed as a minimum requirement, but country-specific H&S regulations (e.g., from Canada, Australia, or European Union countries) shall prevail, and an applicable SOP should be developed to comply with specific H&S regulations.



## **2.3 Applicable Enterprise SOPs**

Applicable Enterprise Standards of Practice and SOPs that are applicable to this Bloodborne Pathogen SOP are as follows:

- HSE SOP-113, Medical Monitoring

## **3.0 Definitions**

### **3.1 Bloodborne Pathogens**

Bloodborne pathogens are pathogenic microorganisms present in human blood that can cause disease. These pathogens include, but are not limited to, HBV and HIV.

### **3.2 Chlorine Bleach**

Chlorine bleach (household bleach) is defined as a solution of 5.25 percent sodium hypochlorite diluted between 1:10 and 1:100 with water.

### **3.3 Contaminated**

This term refers to the presence or reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

### **3.4 Contaminated Sharps**

This is any contaminated object that can penetrate the skin, including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, refuse, and exposed ends of dental wire.

### **3.5 Exposure Incident**

An exposure incident involves contact between eye, mouth or other mucous membranes, parenteral, or non-intact skin with blood or other potentially infectious materials that results from an employee performing a job duty.

### **3.6 Occupational Exposure**

Occupational exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may occur as employees perform work.

### **3.7 Other Potentially Infectious Material (OPIM)**

This is any human body fluid including cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, semen, vaginal secretions, or any other body fluid that is visibly contaminated with blood, such as saliva or vomitus. It also includes all body fluids in situations where it is difficult or impossible to differentiate between body fluids, such as during an emergency response, and any unfixed tissue (other than intact skin) from a human (living or dead).

### **3.8 Parenteral**

Parenteral refers to piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

### **3.9 Potentially Infectious Material (PIM)**

PIMs include materials visibly contaminated with blood, materials in situations where it is difficult or impossible to determine if blood contamination is present, and materials where blood contamination cannot reasonably be ruled out.



### **3.10 Regulated Waste**

Regulated waste includes liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

### **3.11 Source Individual**

Individuals, living or dead, whose blood or other potentially infectious material may be a source of occupational exposure to the employee.

### **3.12 Universal Precaution**

Universal precaution is an approach to infection control whereby all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

## **4.0 Roles and Responsibilities**

Listed below are the roles and responsibilities required to implement the company BBP program.

### **4.1 Project Manager (PM)**

The PM will ensure the required resources are provided and the appropriate staff assigned to implement a BBP program. The PM will provide specific information to the RHSM to develop a BBP exposure control plan for project-specific tasks when needed.

### **4.2 Responsible Business Group Health and Safety Manager (RHSM)**

The responsible BG Health and Safety Manager provides the technical support and guidance for projects involving BBP, produces a project-specific exposure control plan when required, lists the general requirements in the project Health and Safety Plan (HSP) or Field Safety Instruction (FSI), and conducts project H&S audits on the effectiveness of program.

### **4.3 Responsible Environmental Manager (REM)**

The responsible BG Environmental Manager provides the technical support and guidance for projects generating BBP waste, lists the requirements in the project Environmental Plan (EP), and determines the disposal of regulated waste for offices or projects.

### **4.4 Safety Coordinator (SC)**

The office or project Safety Coordinator (SC) is designated as the employee for providing first aid/ cardiopulmonary resuscitation (CPR), and ensures the requirements of the exposure control plan are implemented.

### **4.5 Facility or Office Manager (FOM)**

The Facility or Office Manager ensures first-aid and BBP supplies are provided for their office and coordinates the exposure control plan with the office SC.



## 4.6 Safety Program Assistant (SPA)

The Safety Program Assistant schedules BBP training, vaccinations, and medical examinations, as well as maintaining training records and coordinating medical records with the Consulting Company Occupational Physician.

## 4.7 CH2M HILL Employees

All CH2M HILL employees who provide first aid must maintain their first-aid certification, receive BBP training, follow the exposure control plan requirements described in this SOP or HSP, FSI, or EP, and report any incidents that may have resulted in exposure to BBP.

# 5.0 Requirements

The following requirements described in this Enterprise SOP must be implemented.

## 5.1 Exposure Control Plan

- Employees expected to render first aid as a collateral duty in response to injuries resulting from workplace incidents fall within the exposure control plan requirements in this SOP. This includes SCs, individuals designated as certified in first aid and CPR on CH2M HILL projects, and individuals designated as certified in first aid and CPR on the CH2M HILL office phone directories. First-aid "Good Samaritan" acts such as assisting a coworker with a nosebleed or other minor first-aid assistance are not covered by this plan.
- An exposure control plan must be developed for projects where contact with PIM or OPIM is encountered or cannot reasonably be ruled out. Examples of projects that would fall under this requirement are waste characterization site sampling, sorting refuse, and janitorial or waste collection services where medical, dental, or biological waste would be encountered.

Note: This SOP previously included employees exposed to raw sewage. OSHA concluded that raw sewage is not in the scope of the bloodborne pathogen standard. CH2M HILL's occupational physician supports this position. Employees exposed to raw sewage should have a current tetanus vaccination and wear personal protective equipment (PPE) to prevent contact.

## 5.2 Engineering and Work Practice Controls

To eliminate or minimize employee exposure to bloodborne pathogens, observe the following engineering and work practice controls. PPE shall also be used where the potential for occupational exposure remains, even after implementation of these engineering and work practice controls.

- Observe universal precautions to prevent contact with blood or other PIM. Where differentiation between body fluid types is difficult or impossible, consider all body fluids to be PIM.
- Consider all sharps to be contaminated and PIM.
- Always wash your hands and face with soap and running water after contacting PIM. If washing facilities are unavailable, use an antiseptic cleanser with clean paper towels or moist towelettes. When antiseptic cleansers or towelettes are used, always rewash your hands and face with soap and running water as soon as available. Do not consume food or beverages until after thoroughly washing your hands and face.
- Decontaminate all potentially contaminated equipment and environmental surfaces with chlorine bleach as soon as possible.



- Use a chlorine bleach solution of 5.25 percent sodium hypochlorite diluted with 10 parts water for decontaminating equipment or environmental surfaces after initially removing blood or other PIMs. Remove contaminated PPE as soon as possible before leaving a work area. Refer to Attachment 1: Summary of PPE and Decontamination Agents and Section 5.3 below.
- Place regulated waste in containers that are closable; sized and constructed to contain all contents; and prevent leakage of fluids during handling, storage, transport or shipping. The container must be labeled with a biohazard warning label, included in Attachment 2, or color-coded. The container must be tightly closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping. Coordinate disposal of regulated waste with the appropriate REM.

### **5.3 PPE Requirements**

PPE is used to prevent exposure to BBP and is provided to employees according to the task performed. PE is provided at no cost to the employee and can be obtained through company equipment warehouses or through vendors. Examples of PPE include the following:

- Latex inner gloves, PVC outer gloves, and puncture-resistant utility outer gloves
- Latex allergies must be taken into account and appropriate hypoallergenic latex gloves or medical-grade nitrile gloves may be used as a substitute.
- Safety goggles, glasses, or full face shields
- Air-purifying respirators equipped with HEPA filters
- Tyvek or cotton coveralls and rubber aprons

Employees expected to render first aid must be aware of the following:

- First aid kits will be equipped with a BBP Protection Kit.
- BBP kits contain gloves, masks, CPR protectors, biohazard disposal bags, antiseptic cleanser, splash-proof goggles, towels, wipes, and an absorbent powder to clean up spills.

### **5.4 Communication**

- Employees with potential occupational exposure to blood or other PIMs must participate in CH2M HILL's Bloodborne Pathogens Training Program.
- All containers holding waste that may contain PIMs must be labeled with a biohazard warning label (Attachment 2).

### **5.5 Hepatitis B Vaccination**

For vaccination to HBV prior to occupational exposure the following applies:

- After completing training and within 10 working days of assignment, HBV vaccine is offered to employees who may be exposed to PIMs. (Note: Employees who render first aid as a collateral duty receive the vaccine after exposure.)
- Employees who decline the HBV vaccine must sign the declination form (see Attachment 3) indicating they declined the vaccination. The completed form is forwarded to the appropriate SPA and placed in the employee's medical file.

For vaccination to HBV after rendering first aid, the following applies:

- An employee who renders first aid to an injured coworker and contacts blood or other body fluids without using appropriate PPE such as gloves, or who renders CPR without a mouth shield is considered exposed to PIMs and will be offered the HBV vaccination series.



- If the employee declines vaccination, the employee must sign a declination form (see Attachment 3).

The process to receive the HBV vaccination is as follows:

- Once authorization is obtained, the appropriate SPA will schedule the vaccination with the local medical provider.
- An employee who has received the vaccination series, has demonstrated immunity, or for whom the vaccination is contraindicated should not receive the vaccine.

## 5.6 Post Exposure

CH2M HILL will provide employees exposed to BBP with a confidential medical examination. This examination includes the following procedures:

- Employee notifies supervisor
- The exposure is documented using the Incident Report Form (IRF)
- The exposed employee's and the source individual's blood is tested (with consent)
- Administer post-exposure prophylaxis
- Evaluate any reported illness

If the exposed employee consents to blood collection but does not give consent for testing, the sample will be preserved for 90 days. The employee can give consent any time during the 90 days.

If the source individual does not consent to testing, CH2M HILL will establish that consent cannot be obtained. If consent to collect the blood is obtained but consent to test is not, the blood sample will be preserved for 90 days. If within 90 days the source individual agrees to testing, the blood will be tested. Results of the source individual's testing are made available to the exposed employee's physician.

Within 15 days of the completed examination, CH2M HILL will verify that the employee has been informed of the results.

## 6.0 Training

Employees must receive BBP training at the time of initial assignment and at least annually thereafter. BBP training is completed online on the HSE&Q web site. Additional training may be required if a task is modified or new procedures are instituted that affect the employee's exposure.

## 7.0 Revision Log

Revision	Date	Description	File Name
1	03/19/2007	Updated to SOP	

## 8.0 Attachments

- Attachment 1: PPE Summary and Decontamination Agents
- Attachment 2: Biohazard Warning Label
- Attachment 3: Hepatitis B Vaccine Declination



## Attachment 1: PPE Summary and Decontamination Agents

### Bloodborne Pathogen Standard Operating Procedure HSE-202

## Attachment 1: PPE Summary and Decontamination Agents

Attachment 1					
SUMMARY OF PPE AND DECONTAMINATION AGENTS (USED TO REDUCE EXPOSURES TO BLOODBORNE PATHOGENS)					
Location and Activity	Gloves	Body	Foot	Face, Eyes, Nose	Decontamination Agent
Render first aid/CPR, clean spilled blood	Latex gloves provided in bloodborne pathogen protection kit	Normal work attire; however, take care to avoid contaminating clothing with victim's blood	Normal work attire	Mouth shield, eye goggles, mask as provided in bloodborne pathogen protection kit	Use powder and antiseptic wipes provided in bloodborne pathogen protection kit



## Attachment 2: Biohazard Warning Label

Bloodborne Pathogen  
Standard Operating Procedure HSE-202





## **Attachment 3: Hepatitis B Vaccine Declination**

**Bloodborne Pathogen  
Standard Operating Procedure HSE-202**

### **Hepatitis B Vaccine Declination**

The Occupational Safety and Health Administration (OSHA) requires the following declination form to be signed in the event that an employee declines hepatitis B vaccination. Complete the form and forward to the appropriate Safety Program Assistant (SPA).

"I understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring hepatitis B virus infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If, in the future, I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me."

Name (print): \_\_\_\_\_

Signed \_\_\_\_\_

Date: \_\_\_\_\_





## **Reproductive Health Enterprise Standard Operating Procedure HSE&Q 120**

### **1.0 Purpose**

This Enterprise HSE&Q Standard Operating Procedure (SOP) defines the Reproductive Health procedures that apply to all CH2M HILL Legal Entities and Business Groups. It is our policy to provide a safe and healthy working environment to all CH2M HILL employees.

#### **1.1 References**

The following programs and sources were consulted to prepare this SOP:

- Hazard Communications, CH2M HILL Health, Safety, and Environment (HSE) Standard of Practice (SOP) #107
- U.S. Center for Disease Control (CDC), National Institute for Occupational Safety and Health (NIOSH) web page, <http://www.cdc.gov/niosh/topics/repro/>

### **2.0 Scope**

This SOP applies to all CH2M HILL Legal Entities and Business Groups that operate in the United States (US) and internationally. It should be used as a starting point for international operations, but country-specific health and safety (H&S) regulations (e.g., Canada or Australia) shall prevail, and a country-specific standard or standard operating procedure (SOP) should be developed to comply with these specific H&S regulations.

This SOP contains basic information on general reproductive health issues (Attachment 1). Information on potential occupational risk factors is contained in Attachment 2 and Attachment 3 for women and men, respectively. Attachments 1 through 4 provide general information and do not eliminate the need for employees to seek medical advice and/or care.

This SOP applies when there is the potential for CH2M HILL employees to be exposed to workplace hazards that may affect reproductive health, regardless of whether the company, a subcontractor, or a third-party contractor is responsible for operations.

#### **2.1 Exception**

For the purposes of this SOP, independent contractors and persons employed by an employment agency or its equivalent are not considered employees.



## **3.0 Definitions**

### **3.1 Reproductive Disorders**

According to NIOSH, reproductive disorders include reduced fertility, impotence, menstrual disorders, birth defects, developmental disorders, spontaneous abortions, low birth weights, pre-term births, and various other disorders that affect offspring.

### **3.2 Reproductive Toxins**

According to NIOSH, reproductive toxins include any chemical that affects the reproductive system and that may produce chromosomal damage and/or have an adverse affect on the fetus. Reproductive toxins may also include biological and/or physical agents that adversely affect reproduction.

## **4.0 Responsibilities**

The following section outlines the roles and responsibilities for individuals when applying this SOP.

### **4.1 Business Group (BG) Health and Safety (HS) Leads**

The BG HS Leads are responsible for implementing this SOP for all projects in their BGs. The BG HS Leads also have the authority to approve deviation from this standard when doing so is necessary to accommodate more stringent state and local requirements.

### **4.2 Project Manager (PM)**

The CH2M HILL Project Manager (PM) is responsible for providing adequate resources (i.e., budget and staff) for all project-specific implementation of the HS management process. The PM may delegate specific tasks to other project staff but has overall HS management responsibility and retains ultimate HS responsibility for the project and to the employees assigned to the project, ensuring that their concerns and requests for information regarding reproductive health are addressed.

### **4.3 Site Manager (SM)**

The CH2M HILL Site Manager (SM) is responsible for all onsite field operations. The SM is typically the Construction Manager, Site Superintendent, Site Supervisor, or Field Team Leader. The SM is directly responsible for implementing all aspects of the project HS plan, as assigned by the PM, and for field supervision of employees who may seek information regarding site hazards that may affect their reproductive health.

### **4.4 Responsible Business Group Health and Safety Manager (RHSM)**

The RHSM is assigned by the BG HS Lead to provide health and safety technical guidance and support to the project. The RHSM prepares and/or approves the CH2M HILL project H&S plan, reviews subcontractor HS plans and submittals, conducts project HS audits, and



provides HS support and guidance to employees assigned to the project regarding their requests for information or issues associated with their reproductive health.

#### **4.5 Site Safety Coordinator (SSC)**

The SSC is either the SM or the person designated by the SM to implement the project HS Plan. The SSC must have successfully completed all required SSC training. The SSC works with the RHSM and with the employee to respond to employee requests for information about reproductive hazards in the workplace.

#### **4.6 CH2M HILL Employees**

All CH2M HILL employees are responsible for practicing safe work practices and complying with this SOP and all project HS requirements. All CH2M HILL employees are encouraged to take a proactive approach toward maintaining their reproductive health by consulting with their personal physician and requesting information from the SSC or RHSM on potential reproductive hazards they may encounter.

#### **4.7 Responsible BG Human Resources Manager (HRM)**

The BG HRM is responsible for advising the appropriate BG H&S staff, PMs, SMs and employees on CH2M HILL policies and benefit options available to maintain an employee's reproductive health.

#### **4.8 Consulting Company Occupational Physician (CCOP)**

The CCOP is responsible for providing information to employees, upon request, regarding the potential risk associated with reproductive hazards they might encounter during their work assignments. This information would be intended to be used by employees to make informed decisions about reproductive toxins they may encounter in the workplace to assist with determining appropriate precautions to follow or to assist with determining the possibility of requesting potential alternative work assignments.

### **5.0 Procedure**

#### **5.1 General Requirements**

All full-time or part-time CH2M HILL employees, including but not limited to those who are considering becoming pregnant, who are pregnant, who are breastfeeding, or who may wish to have children some day, should take a proactive approach toward maintaining their reproductive health and should consult their personal physicians regarding reproductive health. Employees should also request information from their BG HS staff on potential reproductive toxins associated with the projects they are assigned to and should consult with the PM or SM and HRM to determine if there is a potential alternative work assignment, if such assignment becomes necessary because of the employee's pregnancy or breastfeeding and the presence of reproductive toxins on the project.



Employees should seek the following general information regarding reproductive health:

- Review Attachments 1 through 4 of this Enterprise Standard Operating Procedure to develop awareness of the potential issues and hazards that may affect their reproductive health.
- Consult their personal physician regarding their reproductive health and the possible reproductive hazards they may encounter in their work assignment.
- Request information from the RHSM or BG HS Lead on potential reproductive toxins associated with their work assignment.
- Consult with the CCOP prior to working in potentially hazardous environments that may affect their reproductive health.
- Report their situation to their HRM if their work environment may present a reproductive hazard.

## **5.2 Responsible Health and Safety Manager (RHSM)**

The RHSM is responsible for evaluating potential chemical hazards associated with CH2M HILL projects and for providing employees with information on reproductive toxins, upon request.

## **5.3 Project Managers and Site Managers**

PMs or SMs are responsible for encouraging employees with reproductive health concerns (i.e., employees who are pregnant or breastfeeding) who may be potentially exposed to chemical substances and/or reproductive toxins to seek information about those substances from the RHSM, to consult with the CCOP, and to work with the HRM to identify potential alternative work assignments. Such alternative work assignments may, however, not be available.

## **5.4 Company Consulting Occupational Physician**

The CCOP provides information to employees, upon request, about the potential reproductive hazards they might encounter. The CCOP's objective in these conversations is to provide the employee with enough information so that the employee

- 1) Understands the potential risk associated with their work assignments, and
- 2) Can make an informed decision about whether they to request an alternative work assignment.

## **5.5 Human Resources Manager**

The HRM will work with the supervisor of an employee who has reproductive health concerns to identify potential alternative work-assignment options, should such a reassignment become necessary because of the employee's pregnancy or breastfeeding. Reassignments are often temporary. If there is no reassignment available, the employee may



qualify for short-term disability; such qualification is determined under CH2M HILL's short-term disability plan.

#### **5.5.1 Financial Participation**

CH2M HILL's financial participation when employees consult personal physicians about reproductive health issues is limited to existing medical benefits provided under the applicable employment policies. CH2M HILL will pay for phone consultations with the CCOP.

### **5.6 Subcontractor Management**

Subcontractor H&S responsibilities are expressly defined through the subcontract terms and conditions. Subcontractors must determine how to conduct their operations, in compliance with applicable HS regulations and industry standards, and how to correct deficiencies. CH2M HILL employees shall not direct the means and methods of subcontractor operations.

Subcontractors are responsible and accountable for implementing these requirements and any additional requirements established in their own safety procedures. Subcontractors retain control over their practices, and CH2M HILL's oversight does not relieve them of their own responsibility for effective implementation and enforcement of HS requirements. The elements contained in this SOP apply only to CH2M HILL full-time and part-time employees and do not directly apply to CH2M HILL subcontractors.

## **6.0 Revision History**

Revision	Date	Description	File Name
	08/31/2006		
	11/14/2006	Copy edit by Jeff Crisafulli	ReproHealth_legal_edits_JS_111406.doc

## **7.0 Attachments**

- Attachment 1:** General Reproductive Health Information
- Attachment 2:** Female Reproductive Health
- Attachment 3:** Male Reproductive Health
- Attachment 4:** OSHA Reproductive Health Guidelines



## **Attachment 1:**

### **General Reproductive Health Issues**

If you plan to become pregnant, you can take steps to increase your chances of having a healthy baby. Your lifestyle choices, such as not drinking or smoking, have the largest impact on whether you will have a healthy baby. The information presented below was taken from the March of Dimes web site (<http://www.marchofdimes.com/>) and is provided for your information. Reading this information does not replace the need for consulting a physician.

If you plan to become pregnant, you should consider taken the following actions:

- Consult with your personal physician on the necessity of taking a multivitamin with 400 micrograms of folic acid every day before pregnancy.
  - Get a pre-pregnancy checkup.
  - Eat healthy food, maintain a healthy weight, and get fit.
  - Stop smoking and avoid secondhand smoke.
  - Stop drinking alcohol and don't use illegal drugs.
  - Avoid infections because some can harm a fetus.
  - Avoid hazardous substances and chemicals.
  - Talk to you health care provider about your family history, genetics, and birth defects.
  - Avoid stress.
-



## Attachment 2:

### Female Reproductive Health

Many factors can affect a woman's reproductive health and her ability to produce healthy children. It is known that the health of an unborn child can suffer if a woman smokes, drinks alcohol, or fails to eat right during pregnancy. However, little is known about the cause of most reproductive health problems, such as infertility, miscarriage, and birth defects. It is known that some workplace hazards can affect a woman's reproductive health, her ability to become pregnant, or the health of her unborn children.

Table 2-1 and 2-2 contain information taken from a National Institute for Occupational Safety and Health document on female reproductive health. This information does not replace the need to consult with a physician when considering becoming pregnant or when pregnant.

**TABLE 2-1**  
Chemical and Physical Agents that Are Reproductive Hazards for Women in the Workplace

Agent	Observed Effects	Potentially Exposed Workers
Cancer treatment drugs (e.g., methotrexate)	Infertility, miscarriage, birth defects, low birth weight	Health care workers, pharmacists
Certain ethylene glycol ethers such as 2-ethoxyethanol (2EE) and 2-methoxyethanol (2ME)	Miscarriages	Electronic and semiconductor workers
Carbon disulfide (CS <sub>2</sub> )	Menstrual cycle changes	Viscose rayon workers
Lead	Infertility, miscarriage, low birth weight, developmental disorders	Battery makers, solderers, welders, radiator repairers, bridge repainters, firing range workers, home remodelers
Ionizing radiation (e.g., X-rays and gamma rays)	Infertility, miscarriage, birth defects, low birth weight, developmental disorders, childhood cancers	Health care workers, dental personnel, atomic workers
Strenuous physical labor (e.g., prolonged standing, heavy lifting)	Miscarriage late in pregnancy, premature delivery	Many types of workers



**TABLE 2-2**

Disease-causing Agents that Are Reproductive Hazards for Women in the Workplace

<b>Agent</b>	<b>Observed Effects</b>	<b>Potentially Exposed Workers</b>	<b>Preventive Measures</b>
Cytomegalo-virus (CMV)	Birth defects, low birth weight, developmental disorders	Health care workers, workers in contact with infants and children	Good hygienic practices such as handwashing
Hepatitis B virus	Low birth weight	Health care workers	Vaccination
Human immuno-deficiency virus (HIV)	Low birth weight, childhood cancer	Health care workers	Practice universal precautions
Human parvovirus B19	Miscarriage	Health care workers, workers in contact with infants and children	Good hygienic practices such as handwashing
Rubella (German measles)	Birth defects, low birth weight	Health care workers, workers in contact with infants and children	Vaccination before pregnancy if no prior immunity
Toxoplas-mosis	Miscarriage, birth defects, developmental disorders	Animal care workers, veterinarians	Good hygiene practices such as handwashing
Varicella-zoster virus (chicken pox)	Birth defects, low birth weight	Health care workers, workers in contact with infants and children	Vaccination before pregnancy if no prior immunity



## Attachment 3:

### Male Reproductive Health

Many factors can contribute to producing healthy children. It is well known that the health of an unborn child can suffer if a woman fails to eat right, if she smokes, or if she drinks alcohol during pregnancy. Many men, however, do not know that exposure to substances in the workplace can affect their ability to have healthy children.

This attachment contains information from the National Institute for Occupational Safety and Health (NIOSH) document about male reproductive hazards. Table 3-1 provides a list of exposure types and potential effects; it does not provide a complete list of agents that can negatively affect male reproduction or their adverse effects, and it should not replace consultation with a physician.

**TABLE 3-1**  
**Male Reproductive Hazards\***

Type of Exposure	Observed Effects			
	Lowered Number of Sperm	Abnormal Sperm Shape	Altered Sperm Transfer	Altered Hormones/ Sexual Performance
Lead	X	X	X	X
Dibromochloropropane	X			
Carbaryl (Sevin)		X		
Toluenediamine and dinitrotoluene	X			
Ethylene dibromide	X	X	X	
Plastic production (styrene and acetone)		X		
Ethylene glycol monoethyl ether	X			
Welding		X	X	
Perchloroethylene			X	
Mercury Vapor				X
Heat	X		X	



**TABLE 3-1**  
Male Reproductive Hazards\*

Type of Exposure	Observed Effects			
	Lowered Number of Sperm	Abnormal Sperm Shape	Altered Sperm Transfer	Altered Hormones/ Sexual Performance
Lead	X	X	X	X
Military	X			
Kepone**			X	
Bromine vapor**	X	X	X	
Radiation** (Chernobyl)	X	X	X	X
Carbon disulfide				X
2,4-Dichlorophenoxy acetic acid (2,4-D)		X	X	

\* Studies to date show that some men experience the health effects listed in this table after workplace exposures. However, these effects may not occur in every man. The amount of time a male worker is exposed, the amount of hazard to which he is exposed, and other personal factors may all determine whether an individual is affected.

\*\* Workers were exposed to high levels as a result of a workplace accident.

## Effects of Male Reproductive Toxins

### Number of Sperm

Some reproductive hazards can stop or slow the actual production of sperm. This means that there will be fewer sperm present to fertilize an egg; if no sperm are produced, the man is sterile. If the hazard prevents sperm from being made, sterility is permanent.

### Sperm Shape

Hazardous chemicals may cause the shape of sperm cells to change. These altered sperm often have trouble swimming or lack the ability to fertilize the egg.

### Sperm Transfer

Hazardous chemicals may collect in the epididymis, seminal vesicles, or prostate. These chemicals may kill the sperm, change the way in which they swim, or attach to the sperm and be carried to the egg or the unborn child.

### Sexual Performance

Changes in amounts of hormones can affect sexual performance. Some chemicals, such as alcohol, may also affect the ability to achieve erections, whereas others may affect the sex



drive. Several drugs (both legal and illegal) affect sexual performance, but little is known about the effects of workplace hazards.

### **Sperm Chromosomes**

Reproductive hazards can affect the chromosomes found in sperm. The sperm and egg each contribute 23 chromosomes at fertilization. The DNA stored in these chromosomes determines what we will look like and how our bodies will function. Radiation or chemicals may cause changes or breaks in the DNA. If the sperm's DNA is damaged, it may not be able to fertilize an egg; or if it does fertilize an egg, it may affect the development of the fetus. Some cancer treatment drugs are known to cause such damage. However, little is known about the effects of workplace hazards on sperm chromosomes.

### **Pregnancy**

If a damaged sperm does fertilize an egg, the egg might not develop properly, causing a miscarriage or a possible health problem in the baby. If a reproductive hazard is carried in the semen, the fetus might be exposed within the uterus, possibly leading to problems with the pregnancy or with the health of the baby after it is born.



## **Attachment 4:**

### **OSHA Reproductive Health Guidelines**

Hazard communication standards in 29 CFR 1910.1200 require that all personnel involved in any aspect of the handling of covered hazardous chemicals must receive information and training to apprise them of these hazards in the work area, including reproduction health hazards. Other OSHA standards include reproductive health guidelines for potential hazards from lead (1910.1025), 1,2-dibromo-3-chloropropane (1910.1044), and ethylene oxide (1910.1047).

The National Occupational Institute of Safety and Health (NIOSH) is a part of the Department of Health and Human Services, the federal agency responsible for researching and recommending methods to prevent work-related injury and illness, including reproductive disorders.



# **CH2MHILL**

## **Excavation and Trenching Safety**

### **Enterprise Standard Operating Procedure HSE&Q-307**

#### **1.0 Purpose**

This Enterprise Standard Operating Procedure (SOP) outlines the requirements that CH2M HILL legal entities and business groups (BGs) must comply with when performing excavation and trenching activities.

This SOP provides information about the spectrum of hazards and issues to be addressed during each phase of a project associated with excavation operations. Excavation hazards addressed in this SOP include exposure to cave-ins, falls, falling objects, hazardous atmospheres, unstable structures, and excavating into underground utilities.

#### **2.0 Scope and Application**

This SOP applies enterprise-wide to all CH2M HILL legal entities and BGs, their employees, subcontractors, and their lower-tier subcontractors that operate in the United States (U.S.) and internationally.

Some state's Occupational Safety and Health Administration (OSHA) plans may have more stringent requirements. Contact the appropriate Responsible BG health and safety manager (RHSM) to address these specific requirements. This SOP should be used as a starting point for international operations, but country-specific health and safety (H&S) regulations (that is, Canada or Australia) shall prevail, and a country-specific SOP should be developed to comply with these specific H&S regulations.

This Enterprise SOP applies when:

- CH2M HILL employees enter excavations, regardless of the company responsible for excavation safety (CH2M HILL, subcontractor, or third party contractor)
- CH2M HILL self-performs excavation activities; and/or,
- CH2M HILL provides oversight of subcontractor's excavation activities

This SOP does not apply to excavation activities in areas with known or potential ordnance explosives (OE)/unexploded ordnance (UXO) hazards. These requirements are addressed in the OE Enterprise SOP.

#### **2.1 Applicable Enterprise SOPs**

Other Enterprise SOPs that may be applicable to excavation activities include the following:



- The requirements for operating and/or exposure to earthmoving equipment are contained in the "Earthmoving Equipment" SOP.
- Excavation activities that are performed on sites with known or potential OE/UXO hazards must implement additional excavation precautions found in the OE Enterprise SOP.
- Soil suspected to be contaminated should be sampled and analyzed for characterization prior to excavation under procedures described in the "Waste Analysis and Characterization" SOP.
- A Stockpile Management Plan should be prepared as discussed in the "Stockpiles" SOP to address country, state, and local stockpiling requirements.
- A Storm Water Pollution Prevention Plan (SWPPP) or an Erosion and Sediment Control Plan may be required, as discussed in the "Wastewater/Storm Water" SOP, where construction activities cover greater than a threshold area. Consult your Environmental Manager (EM)
- Stockpiles may require liners and covers and excavations may require silt fences, covering, or other best management practices (BMPs) to control erosion or runoff.
- Fugitive dust and noise must be monitored and suppressed where necessary.
- All wastes generated shall be characterized prior to excavation.
- Hazardous waste shall be managed and disposed in accordance with the "Onsite Waste Management" SOP, and the "Offsite Waste Management" SOP.
- If excavation involves hazardous wastes, the "Decontamination" SOP shall be followed. No potentially contaminated equipment shall be permitted to leave the work site.

### **3.0 Definitions**

The following definitions are used in this excavation and trenching SOP.

#### **3.1 Benching**

Benching is a method of protecting personnel from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

#### **3.2 Company Responsible for Excavation Safety**

The party that has direct control over the excavation operations is responsible for excavation safety. This could be CH2M HILL, a subcontractor, or an independent third party. When CH2M HILL self-performs excavation operations, CH2M HILL assumes responsibility for excavation safety. When CH2M HILL hires a subcontractor to perform an excavation operation, the subcontractor assumes responsibility for excavation safety. When



CH2M HILL employees must enter excavations on projects controlled by an independent third party contractor, the third party contractor assumes responsibility for excavation safety.

### **3.3 Competent Person**

A competent person is one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. The company responsible for excavation safety designates the excavation-specific competent person.

### **3.4 Excavation**

An excavation is any man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal.

### **3.5 Hazardous Atmosphere**

A hazardous atmosphere is one that by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen-deficient, toxic, or otherwise harmful, may cause death, illness, or injury. Specific examples of hazardous atmospheres are provided below.

- Oxygen-deficient atmospheres contain less than 19.5 percent oxygen and can result in a range of symptoms, from dizziness to unconsciousness, and even death at extremely low levels.
- Oxygen-enriched atmospheres contain greater than 23.5 percent oxygen and can increase the flammability of combustible materials.
- Explosive atmospheres contain flammable gases that exceed 10 percent of the lower explosive limit (LEL).
- Carbon monoxide from the exhausts of earthmoving equipment can collect in excavations. Carbon monoxide causes oxygen starvation and can be fatal at a concentration of 1 percent [10,000 parts per million (ppm)] after a 1-minute exposure. Ventilation or respiratory protection is required when carbon monoxide levels exceed 35 ppm.
- Toxic atmospheres may develop depending on the level of contamination in the soil. Refer to the site-specific health, safety and environment (HS&E) plan or field safety instructions for more details.

### **3.6 Independent Third Party Contractor**

An independent third party contractor has no contractual relationship with CH2M HILL and is contracted directly to the owner.

### **3.7 Protective Systems**



Protective systems provide a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems and other systems that provide the necessary protection.

### **3.8 Shielding**

Shielding is a structure that is able to withstand the forces imposed on it by a cave-in, thereby protecting personnel within the structure. Shields can be permanent structures or they can be designed to be portable and moved as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with local regulatory agency requirements. Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

### **3.9 Shoring**

A structure such as a metal hydraulic, mechanical, or timber shoring system supports the sides of an excavation and is designed to prevent cave-ins.

### **3.10 Sloping**

Sloping is a method of excavating in which the sides of an excavation are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies depending on such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

### **3.11 Stable Rock**

Stable rock is natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

### **3.12 Trench**

A trench is a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 meters). An excavation is also considered to be a trench if forms or other structures are installed or constructed in the excavation that reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 meters) or less (measured at the bottom of the excavation).

### **3.13 Type A Soil**

Type A soils are cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (14,629 kilograms per square meter) or greater. Type A soils include clay, silty clay, sandy clay, clay loam, caliche, hardpan, and sometimes silty clay loam and sandy clay loam. No soil should be classified as Type A if it is fissured; if it is subject to vibration from heavy traffic, pile driving, or similar activities; if it was previously disturbed; or if it is part of a sloped, layered system in which the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper.

### **3.14 Type B Soil**



Type B soils are cohesive soils with an unconfined compressive strength greater than 0.5-ton per square foot (4,876 kilograms per square meter) but less than 1.5 tons per square foot (14,629 kilograms per square meter). Type B soils include granular cohesionless soils such as angular gravel, silt, silt loam, sandy loam, and sometimes silty clay loam and sandy clay loam; previously disturbed soils that are not Type C; fissured soils and soils subject to vibration that would otherwise be classified as Type A; dry rock that is not stable; and material that is part of a sloped, layered system in which the layers dip on a slope less steep than four horizontal to one vertical (4H:1V).

### **3.15 Type C Soil**

Type C soils are cohesive soils with an unconfined compressive strength of 0.5-ton per square foot (4,876 kilograms per square meter) or less. Type C soils include granular soils such as gravel, sand, and loamy sand; submerged soil; soil from which water is freely seeping; submerged rock that is not stable; or material in a sloped, layered system in which the layers dip into the excavation at a slope of four horizontal to one vertical (4H:1V) or steeper.

## **4.0 Roles and Responsibilities**

The following sections outline the roles and responsibilities for individuals when using this procedure.

### **4.1 Business Group Health and Safety Leads**

The BG H&S Leads are responsible for implementing this Enterprise H&S SOP for all projects in their BG. The BG HSE&Q Lead also has the authority to approve deviation from this standard to accommodate local requirements.

### **4.2 Project Manager**

The CH2M HILL Project Manager (PM) is responsible for providing adequate resources (budget and staff) for project-specific implementation of the H&S management process. The PM has overall H&S management responsibility, but may delegate specific tasks to other project staff. The PM retains ultimate H&S responsibility for the project.

### **4.3 Site Manager**

The CH2M HILL Site Manager (SM) is responsible for all field operations onsite and is typically the Construction Manager (CM), Site Superintendent, Site Supervisor or Field Team Leader. The SM is directly responsible for implementing all aspects of the project H&S plan, as assigned by the PM.

### **4.4 Responsible Business Group Health and Safety Manager**

The Responsible BG HSM (RHSM) is the HSM assigned by the BG H&S Lead to provide health and safety technical guidance and support to the project. The RHSM prepares and/or approves the CH2M HILL project H&S plan, reviews subcontractor H&S plans and submittals, conducts project H&S audits, and provides H&S support and guidance to the project.



#### **4.5 Site Safety Coordinator**

The Site Safety Coordinator (SSC) is either the SM, or is designated by the SM to implement the project H&S Plan. He or she has successfully completed all required SSC training. The SSC ensures that the party responsible for excavation safety provides an excavation-competent person to inspect and oversee all excavation activities.

#### **4.6 Excavation-competent Person**

The company responsible for excavation safety shall provide an excavation-competent person to inspect and oversee all excavation activities. The competent person shall have training in and knowledge of soil classification, the use of protective systems, and the requirements of local regulatory agency excavation standards. The competent person shall be capable of identifying excavation hazards and have the authority to take corrective actions to eliminate the hazards. The excavation-competent person shall be onsite during excavation activities and during entry into excavations.

#### **4.7 CH2M HILL Employees**

All employees are responsible for following safe work practices and complying with this SOP and project H&S requirements.

All employees are responsible for following the requirements established by the excavation-competent person, ensuring that the excavation-competent person has completed the daily inspection prior to entry and informing the competent person of any unsafe conditions associated with the excavation.

### **5.0 Requirements**

The following excavation and trenching safety requirements outlined in this Enterprise SOP must be implemented.

#### **5.1 General Requirements**

CH2M HILL employees who enter excavations must take precautions to avoid excavation hazards by following the excavation entry requirements provided in Section 5.4 of this standard. CH2M HILL employees who provide oversight of subcontractor excavation activities must also follow the excavation safety requirements provided in Sections 5.5 and 5.6 of this standard. CH2M HILL employees who self-perform excavation activities must follow the excavation safety requirements provided in Sections 5.3, 5.4, 5.5 and 5.6 of this standard.

#### **5.2 Subcontractor Management**

Subcontractor H&S responsibilities are expressly defined through the subcontract terms and conditions. Subcontractors must determine how to conduct their operations, in compliance with applicable H&S regulations and industry standards, and how to correct deficiencies. CH2M HILL employees shall not direct the means and methods of subcontractor operations.



Subcontractors are responsible and accountable for implementing these requirements and any additional requirements established in their own safety procedures. Subcontractors retain control over their practices, and CH2M HILL's oversight does not relieve them of their own responsibility for effective implementation and enforcement of HS&E requirements.

The "Subcontractor Safety Procedure Criteria – Excavations" presented in Attachment 1 provides the minimum criteria for excavation safety procedures. These criteria may be used by the HS&E staff to review submitted subcontractor safety procedures when CH2M HILL is performing oversight of the subcontractor's operations.

The "HS&E Self-Assessment Checklist – Excavations" in Attachment 2 may be used to verify the subcontractor's compliance with established safe work practices, regulations, and industry standards.

### **5.3 CH2M HILL Self-performed Excavation Activities**

The CH2M HILL Excavation Permit (Attachment 3) is required to be completed by the CH2M HILL excavation-competent person when CH2M HILL self-performs excavation activities. The Permit is completed and signed by the CH2M HILL excavation-competent person prior to each day's excavation activities for each excavation on the project.

The physical features of each excavation are documented in the Permit, including the length, depth, and location of the excavation. The Permit also confirms that adequate excavation protective systems have been instituted to protect workers from cave-ins, and that protective measures have been taken to control the hazards posed by surface encumbrances, underground installations, potential hazardous atmospheres, water accumulations, and stability of adjacent structures for each excavation.

An excavation permit may be extended for the same excavation for more than one day, provided there are no changes in the excavation physical features, protective systems to prevent cave-ins, or other protective measures to control the hazards posed by surface encumbrances, underground installations, potential hazardous atmospheres, water accumulations, or stability of adjacent structures.

Excavations and their adjacent areas and protective systems shall be inspected by an excavation-competent person prior to the start of each day's excavation activities, as needed throughout the work shift, and after every rainfall or other event that could increase the potential for excavation cave-in. Excavation inspections are conducted to identify evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres or other hazardous conditions.

The CH2M HILL Daily Excavation Inspection Checklist (Attachment 4) is required to be completed by the CH2M HILL excavation-competent person when CH2M HILL self-performs excavation activities. The Inspection Checklist is completed and signed by the CH2M HILL excavation-competent person each day prior to entering the excavation.



## **5.4 Excavation Entry Requirements**

The requirements of this subsection are to be followed by CH2M HILL employees and subcontractor personnel who enter excavations, regardless of the company responsible for excavation safety (CH2M HILL, subcontractor, or third party contractor).

The party responsible for excavation safety shall provide an excavation-competent person to inspect and oversee all excavation activities. CH2M HILL personnel entering an excavation controlled by a third party contractor or subcontractor must comply with the written procedures or permits governing the third party contractor's or subcontractor's excavation activities, and must document the name of the third party or subcontractor excavation-competent person in their daily log.

All personnel entering the excavation shall verify that an excavation permit has been completed prior to entry.

- Personnel shall not enter excavations until the competent person has completed the daily inspection and has authorized entry.
- Personnel entering excavations shall be aware of and follow all requirements established by the excavation-competent person.
- Personnel shall not enter excavations where protective systems are damaged or unstable unless they are responsible for excavation safety and entry must be made to repair the systems. Entry shall be made only after additional precautions have been taken to ensure safe entry, as determined by the excavation-competent person.
- Personnel shall not enter excavations where objects (including machinery) or structures above the work location might become unstable and fall into the excavation.
- Personnel shall not enter excavations where there is the potential for a hazardous atmosphere until the air has been tested and found to be at safe levels, as determined by the excavation-competent person. It is important to remember that some chemical vapors are heavier than air and can accumulate at the bottom of excavations.
- Personnel shall not enter excavations that contain accumulated water unless precautions have been taken to prevent excavation cave-in, as determined by the excavation-competent person.

## **5.5 Excavation Safety Requirements**

The requirements of the following subsections are to be followed by CH2M HILL personnel when self-performing excavation activities, and by subcontractors when performing excavation activities while CH2M HILL provides oversight of subcontractors activities.

### **5.5.1 General**

- A daily safety briefing/meeting shall be conducted with all excavation personnel to discuss the work planned for the day and the HS&E requirements to be followed.



- Excavations that are to be entered shall be inspected each day, as needed throughout the work shift, and after every rainfall or other event that could increase the potential for excavation cave-in. This inspection shall be conducted by the excavation-competent person and shall include, at a minimum, indications of possible cave-in, water accumulation, failure of any component of protective systems, stability of spoil piles and adjacent structures, and indications of hazardous atmosphere. Subcontractors shall document their daily excavation inspections using their excavation inspection checklist.
- If the excavation-competent person observes any deficiency or unsafe condition, excavation entry will not be permitted and all exposed personnel shall be removed from the excavation until adequate precautions have been taken to ensure safe entry.
- Walkways shall be provided where personnel are required or permitted to cross over excavations. Walkways 6 feet (1.8 m) or more above lower levels shall be equipped with standard guardrails.
- Guardrails, fences, or barricades shall be installed at excavations 6 feet (1.8 m) or deeper when the excavations are not readily visible because of plant growth or other visual obstruction.
- Wells, pits, shafts and similar excavations 6 feet (1.8 m) or deeper shall be provided with guardrails, fences, barricades or covers.
- Earthmoving equipment shall be operated in compliance with local regulatory agency requirements.

#### **5.5.2 Prior to Excavating**

- A Dig Permit may be required at certain client facilities.
- The location of underground utilities such as electric, gas, fuel, water, cable, telephone, and sewer, either in service or abandoned, and underground installations such as foundations, underground storage tanks, and any other structures shall be identified before excavating is permitted. Utility companies and/or installation owners shall be contacted for exact locations of their equipment. When the exact location cannot be determined, detection equipment or other acceptable means of locating the underground installations shall be used before excavation.

#### **5.5.3 Excavating Activities**

- All rocks, trees, and other surface encumbrances that are undermined or could become unstable as a result of excavating activities shall be removed or supported to prevent them from falling into the excavation.
- Support systems such as shoring, bracing, or underpinning shall be used to support exposed underground utilities that may become unstable as a result of excavating operations.
- Excavating below the base of a foundation, wall, sidewalk or other surface structure shall not be permitted unless: 1) a support system is provided to ensure the stability of



the structure, 2) the excavation is in stable rock, or 3) a registered professional engineer has determined that the structure is far enough away that it will not be affected by the excavating activity.

- When mobile equipment is required to approach the edge of an excavation and the operator does not have a clear and direct view of the edge, warning systems such as barricades, hand and/or mechanical signals, or stop logs shall be in place to remind the operator of the location of the edge.

#### **5.5.4 Excavation Entry**

- Trenches greater than 4 feet (1.2 meters) deep shall be provided with a ladder, stairway, or ramp positioned so that the maximum lateral travel distance is no more than 25 feet (7.6 meters).
- Structural ramps used solely by personnel shall be designed by a competent person. Structural ramps used by equipment shall be designed by a competent person qualified in structural design (generally a registered professional engineer).
- The atmosphere of excavations greater than 4 feet (1.2 meters) deep shall be tested prior to entry when a hazardous atmosphere exists or could reasonably be expected to exist, such as excavating landfills, hazardous waste dumps; or areas containing sewer or gas utility systems, petroleum distillates, or areas where hazardous substances are stored nearby.
- When atmospheric testing indicates a hazardous atmosphere exists or could reasonably be expected to exist, emergency rescue equipment such as safety harnesses and lifelines and emergency self-contained breathing apparatus (SCBA) shall be readily available.
- When atmospheric testing indicates that a hazardous atmosphere is present, ventilation or appropriate respiratory protection shall be used to eliminate or reduce exposure to safe levels. If ventilation is used, atmospheric testing shall be conducted as often as necessary to ensure safe levels are maintained.
- Excavations that contain accumulated water shall not be entered unless precautions have been taken to prevent excavation undermining and cave-ins. Precautions may include special support systems or shield systems, water removal equipment that is monitored by the excavation-competent person to ensure proper operation, or safety harnesses and lifelines.
- Adequate precautions such as diversion ditches or dikes shall be used to prevent surface water from entering the excavation, and to provide adequate drainage of the area adjacent to the excavation when the natural drainage of surface water is interrupted.
- Personnel shall be protected from materials falling or rolling from the face of the excavation by scaling to remove loose material, or by installing protective barricades.



- Spoil piles, material, and equipment must be kept at least 2 feet (61 centimeters) from the edge of the excavation, or a retaining device must be used to prevent the material from falling into the excavation.

#### **5.5.5 Protective Systems**

The excavation-competent person is responsible for determining the appropriate protective system to be used to prevent excavation cave-in. This determination may be based on the soil classification, space limitations, available materials, type of work to be performed in the excavation, and availability of tabulated data or a registered professional engineer.

CH2M HILL must rely on the expertise of the excavation-competent person with regard to excavation protective systems. The following information provides a general understanding of the common minimum protective system requirements. For the U.S., refer to "OSHA Protective System Requirements Summary" in Attachment 5. For other countries, refer to the country-specific SOP or local regulatory agency requirements.

- Sloping, benching, shoring, shielding, or other protective systems are required to protect personnel from cave-ins except when the excavation is made entirely in stable rock or is less than 5 feet (1.5 meters) deep and there is no indication of possible cave-in, as determined by the excavation-competent person.
- Excavations that are less than 5 feet in depth where examination of the ground by a competent person provides any indication of a potential cave-in shall be sloped to 34 degrees.
- Protective systems for excavations deeper than 20 feet (6.1 meters) must be designed or approved by a registered professional engineer.
- If the excavation soil is not classified by the excavation-competent person, the maximum allowable slope shall be 34 degrees measured from the horizontal. Refer to 5.7 for details about the actual slope and configurations allowed.
- Protective system materials shall be free from damage that might impair their proper function. Damaged components shall be inspected by the competent person to evaluate their suitability for continued use.
- Protective system materials shall be used in a manner consistent with manufacturers' recommendations and shall not be subjected to loads exceeding their design limits.
- Protective system materials shall be securely connected together to prevent sliding, falling, kickouts or other predictable failures.
- Personnel shall be protected from cave-ins while entering and exiting shielding systems.
- Personnel shall not work in shielding systems during installation, removal, or vertical movement. Personnel may remain inside the shield during horizontal movement as long as the shield is not lifted.



### 5.5.6 Protective Systems Removal and Backfilling

- Precautions shall be taken when removing protective system components. Removal shall start at, and progress from, the bottom of the excavation. Components shall be released slowly so that it is possible to detect indications of possible failure of the remaining components. Temporary structural members may be required to carry the loads imposed on the protective system.
- Backfilling shall take place immediately after removal of the protective system.

## 6.0 Training Requirements

CH2M HILL employees who enter excavations, regardless of the company responsible for excavation safety, are required to complete either the CH2M HILL 10-Hour Construction Safety Awareness training course or the Excavation computer-based training module found on the HS&E web page.

CH2M HILL may choose to supplement internal construction training courses with courses provided by local regulatory agencies.

When CH2M HILL self-performs excavation activities, the CH2M HILL excavation-competent person is required to complete a separate excavation-competent person course.

Excavation subcontractors are responsible for complying with all applicable HS&E training requirements and for providing the training necessary to complete their tasks safely.

## 7.0 Assessment Requirements

The "HS&E Self-Assessment Checklist – Excavations" in Attachment 2 is provided as a method for verifying compliance with this SOP. The RHSM may use this checklist when performing H&S audits at CH2M HILL projects, including subcontractor's activities.

## 8.0 Recordkeeping

## 9.0 Revision Log

Revision	Date	Description	File Name

## 10.0 Attachments

Attachment 1 Subcontractor Safety Procedure Criteria – Excavations

Attachment 2 HS&E Self-Assessment Checklist – Excavations

Attachment 3 CH2M HILL Excavation Permit



**Attachment 4 CH2M HILL Daily Excavation Inspection Checklist**

**Attachment 5: OSHA Protective System Requirements Summary**



## **Attachment 1: Subcontractor Safety Procedure Criteria— Excavations**

The following criteria are not intended to be all-inclusive, but are provided as a tool to facilitate development and review of subcontractor safety procedures. Subcontractors are expected to address the following items in their safety procedures:

### **Minimum Acceptable Criteria for Subcontractor Excavation Safety Procedures:**

1. Provide name and qualifications of the “competent person” responsible for excavation activities (for example, years and type of experience, training background):
2. Describe excavation and protective system inspection criteria or procedures (for example, frequency of inspections – daily, as needed throughout day, after rain; visual versus written inspections, items that are inspected):
3. Describe methods of identifying underground utilities (for example, contacting utility companies, detection equipment):
4. Describe specific method(s) of cave-in protection to be used on project (for example, sloping, benching, shoring, shielding):
5. Describe option(s) that will be used for protective systems determination (for example, soil classification, tabulated data, other data, registered professional engineer design):
6. Describe methods used to identify hazardous atmospheres and controls (for example, detection equipment, ventilation, respiratory protection, rescue equipment):
7. Describe methods used to prevent water accumulation (for example, water removal equipment, special support systems, harnesses and lifelines):
8. Describe methods used to protect workers from material falling into the excavation (for example, remove or support objects, keep material 2 feet (61 cm) back from edge of excavation, or keep workers off slopes):
9. Describe methods used to support adjacent structures near excavations (for example, shoring, bracing, or underpinning):
10. Describe safe work practices for other activities to be performed during this project [for example, use of ladders, fall protection, personal protective equipment (PPE)]:
11. Provide summary of equipment that will be needed to perform excavation safely and verify that equipment is in good operational condition (for example, excavation digging equipment, shoring and shielding materials):



## Attachment 2: HS&E Self-Assessment Checklist—Excavations

This checklist shall be used by CH2M HILL personnel only and shall be completed at the frequency specified in the project's Health and Safety Plan/Field Safety Instruction (HSP/FSI).

This checklist is to be used at locations where: 1) CH2M HILL employees enter excavations (complete Sections 1 and 3), and/or 2) CH2M HILL oversight of an excavation subcontractor is required (complete entire checklist).

The SSC may consult with excavation subcontractors when completing this checklist, but shall not direct the means and methods of excavation operations nor direct the details of corrective actions. Excavation subcontractors shall determine how to correct deficiencies and we must rely on their expertise. Conditions considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazardous area until the situation is corrected.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_  
Location: \_\_\_\_\_ PM: \_\_\_\_\_  
Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

- ☐ Evaluate CH2M HILL employee exposures to excavation hazards
  - ☐ Evaluate a CH2M HILL subcontractor's compliance with excavation HS&E requirements
- Subcontractor Name: \_\_\_\_\_

- Check "Yes" if an assessment item is complete/correct.
- Check "No" if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the excavation subcontractor. Section 3 must be completed for all items checked "No."
- Check "N/A" if an item is not applicable.
- Check "N/O" if an item is applicable but was not observed during the assessment.

	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
<b>SECTION 1</b>				
<b>EXCAVATION ENTRY REQUIREMENTS (4.1)</b>				
1. Personnel have completed excavation safety training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Competent person has completed daily inspection and has authorized entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Personnel are aware of entry requirements established by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Protective systems are free from damage and in stable condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Surface objects/structures secured from falling into excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Potential hazardous atmospheres have been tested and found to be at safe levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Precautions have been taken to prevent cave-in from water accumulation in the excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Personnel wearing appropriate, PPE per HSP/SI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



<b>SECTION 2</b>		<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
<b>GENERAL (4.2.1)</b>					
9.	Daily safety briefing/meeting conducted with personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Excavation and protective systems adequately inspected by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Defective protective systems or other unsafe conditions corrected before entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Guardrails provided on walkways over excavation 6 ft (1.8m) or deeper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13.	Barriers provided at excavations 6 ft or deeper when excavation not readily visible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14.	Barriers or covers provided for wells, pits, shafts, or similar excavation 6 ft (1.8 m) or deeper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.	Earthmoving equipment operated safely (use earthmoving equipment checklist in HSE-306)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PRIOR TO EXCAVATING (4.2.2)</b>					
16.	Dig Permit obtained where required by client/facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17.	Location of underground utilities and installations identified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EXCAVATING ACTIVITIES (4.2.3)</b>					
26.	Rocks, trees, and other unstable surface objects removed or supported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27.	Exposed underground utility lines supported	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28.	Undermined surface structures supported or determined to be in safe condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29.	Warning system used to remind equipment operators of excavation edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EXCAVATION ENTRY (4.2.4)</b>					
32.	Trenches > 4 ft (1.2 m) deep provided with safe means of egress within 25 ft (7.6 m)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33.	Structure ramps designed and approved by competent person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34.	Potential hazardous atmospheres tested prior to entry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35.	Rescue equipment provided where potential for hazardous atmosphere exists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36.	Ventilation used to control hazardous atmosphere and air tested frequently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37.	Appropriate respiratory protection used when ventilation does not control hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38.	Precautions taken to prevent cave-in resulting from water accumulation in excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39.	Precautions taken to prevent surface water from entering excavation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40.	Protection provided from falling/rolling material originating from excavation face	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41.	Spoil piles, equipment, materials restrained or kept at least 2 ft (61 cm) from excavation edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EXCAVATION PROTECTIVE SYSTEMS (4.2.5)</b>					
42.	Protective systems used for excavations 5 ft (1.5 m) or deeper, unless in stable rock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43.	Protective systems for excavation deeper than 20 ft (6.1 m) designed by registered PE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44.	If soil unclassified, maximum allowable slope is 34 degrees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45.	Protective systems free from damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46.	Protective system used according to manufacturer's recommendations and not subjected to loads exceeding design limits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47.	Protective system components securely connected to prevent movement or failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48.	Cave-in protection provided while entering/exiting shielding systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49.	Personnel removed from shielding systems when installed, removed, or if vertical movement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>PROTECTIVE SYSTEM REMOVAL AND BACKFILLING (4.2.6)</b>					
50.	Protective system removal starts and progresses from excavation bottom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51.	Protective systems removed slowly and cautiously	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52.	Temporary structure supports used if failure of remaining components observed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53.	Backfilling takes place immediately after protective system removal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Attachment 3: CH2M HILL Excavation Permit

### CH2MHILL

#### EXCAVATION PERMIT

This Permit is required to be completed by the CH2M HILL excavation-competent person when CH2M HILL self-performs excavation activities. The Permit is completed and signed by the CH2M HILL excavation-competent person prior to each day's planned excavation activities for each excavation on the project.

This Permit may be extended for the same excavation for more than one day, provided there are no changes in the excavation's physical features, protective systems to prevent cave-ins, or other protective measures to control the hazards posed by surface encumbrances, underground installations, potential hazardous atmospheres, water accumulations, or stability of adjacent structures.

#### GENERAL INFORMATION

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Date Expires: \_\_\_\_\_

Project/Site Name: \_\_\_\_\_ Project Number: \_\_\_\_\_

Location of Excavation: \_\_\_\_\_

Scope of Work Description: \_\_\_\_\_

Size of Excavation: Depth: \_\_\_\_\_ Width: \_\_\_\_\_ Length: \_\_\_\_\_

#### PRIOR TO EXCAVATING

- ☐ Dig Permit obtained, where required by client/facility
- ☐ Client, installation owners, and utility companies contacted for location of underground utilities
- ☐ Detection equipment used when exact location of underground utilities is unknown
- ☐ Underground utilities located **within 5 feet** of excavations are hand-excavated to determine their exact location

The above data have been checked with drawing on file. When underground utilities are located within 5 feet of excavations, hand-excavation must be used to determine the exact location of buried utilities. Existing lines and interferences in the vicinity of work must be marked by stakes indicating the location and depth before excavating.

#### LINES IN THE VICINITY OF WORK

Electrical \_\_\_\_\_ Sewer \_\_\_\_\_ Drain \_\_\_\_\_ Other \_\_\_\_\_

Telephone \_\_\_\_\_ Steam \_\_\_\_\_ Process \_\_\_\_\_ (Specify) \_\_\_\_\_

Water \_\_\_\_\_ Alarm \_\_\_\_\_ Fiber Optic \_\_\_\_\_ Gas \_\_\_\_\_

#### PRECAUTIONS TAKEN

De-Energize Line \_\_\_\_\_ Insulate Operator \_\_\_\_\_

Ground Tools \_\_\_\_\_ Hand-excavate \_\_\_\_\_

#### ACCESS AND EGRESS

Ladder(s) \_\_\_\_\_ Ramp \_\_\_\_\_ Stairs \_\_\_\_\_

#### SOIL CLASSIFICATION



- ☐ Soils to be excavated have been classified: ☐ Stable Rock ☐ Type A ☐ Type B ☐ Type C  
☐ Combination, describe: \_\_\_\_\_

**NOTE: If soils unclassified, assume to be Type C**

Soil Classification Basis (one visual and one manual test required):

- ☐ Visual Test ☐ Manual Test ☐ Pocket Penetrometer

### EXCAVATING

- ☐ Rocks, trees, and other unstable surface encumbrances located that present a hazard to employees are removed or supported when required  
☐ Underground utilities protected, supported, or removed to safeguard employees  
☐ Undermined surface structures supported or determined to be in safe condition  
☐ Warning system used to remind equipment operators of excavation edge

### HAZARDOUS ATMOSPHERES

Is there a concern for developing a hazardous atmosphere? Yes \_\_\_\_\_ No \_\_\_\_\_

### WATER ACCUMULATIONS

Is protection from the hazards associated with water accumulation required? Yes \_\_\_\_\_ No \_\_\_\_\_  
Excavation interrupts drainage from surface water? Yes \_\_\_\_\_ No \_\_\_\_\_

### PROTECTIVE SYSTEMS

- ☐ Protective systems used for excavations 5 ft (1.5 m) or deeper, unless stable rock  
☐ Protective systems for excavation deeper than 20 ft (6.1 m) designed by registered PE  
☐ Protective systems used: ☐ Sloping/Benching ☐ Shoring ☐ Trench Box ☐ Combination  
Describe: \_\_\_\_\_

**NOTE: No Benching allowed for Type C soil.**

- ☐ Sloping cut to appropriate angle of incline for soil classification (if unclassified, assume Type C soil)  
☐ Shoring/trench boxes used according to manufacturer recommendations and not subjected to loads exceeding design limits  
☐ Protective system components securely connected to prevent movement or failure  
☐ Protective systems inspected before installed  
☐ Defective protective systems replaced or corrected

CH2M HILL Excavation-competent Person Name: \_\_\_\_\_

CH2M HILL Excavation-competent Person Signature: \_\_\_\_\_



## Attachment 4: CH2M HILL Daily Excavation Inspection Checklist

### CH2MHILL

#### DAILY EXCAVATION INSPECTION CHECKLIST

Excavations, their adjacent areas, and their protective systems shall be inspected by an excavation-competent person prior to the start of each day's excavation activities, as needed throughout the work shift, and after every rainfall or other event that could increase the potential for excavation cave-in. This Inspection Checklist is required to be completed by the CH2M HILL excavation-competent person when CH2M HILL self-performs excavation activities. The Inspection Checklist is completed and signed by the CH2M HILL excavation-competent person prior to each day's entry into the excavation.

#### GENERAL INFORMATION

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Weather \_\_\_\_\_

Conditions: \_\_\_\_\_

Project/Site Name: \_\_\_\_\_ Project Number: \_\_\_\_\_

Name/Location of Excavation: \_\_\_\_\_

Scope of Work Description: \_\_\_\_\_

#### INSPECTION CHECKLIST

- ☐ Excavation effectively barricaded to prevent unauthorized entry
- ☐ Barriers provided at excavations 6 ft or deeper when not readily visible
- ☐ Guardrails provided on walkways over excavations 6 ft or deeper
- ☐ Underground utilities protected, supported, or removed to safeguard employees
- ☐ Adjacent structures are adequately supported
- ☐ No tension cracks/fractures or evidence of caving, sloughing, or weak zones observed in soil
- ☐ Precautions taken to prevent surface water from entering excavation
- ☐ Water is not accumulating in excavation
- ☐ When water removal equipment used, it is monitored for proper operation
- ☐ Air monitoring conducted for excavations with hazardous atmosphere potential
- ☐ If hazardous atmosphere, ventilation used to bring conditions to safe level and tested frequently
- ☐ If ventilation unable to bring conditions to safe level, appropriate respiratory protection used
- ☐ Rescue equipment provided where potential for hazardous atmosphere exists
- ☐ Protective systems provided to prevent excavation cave-in
- ☐ Protective systems used: ☐ Benching ☐ Sloping ☐ Shoring ☐ Trench Box ☐ Combination
- ☐ Describe: \_\_\_\_\_
- ☐ Protective systems inspected and are free from damage and in stable condition
- ☐ Protective system components securely connected to prevent movement or failure
- ☐ Sloping cut to appropriate angle of incline for soil classification
- ☐ Shoring installed according to design and secured from movement
- ☐ Hydraulic shores maintained at designed pressure
- ☐ Trench boxes not subjected to loads exceeding design limits
- ☐ Vehicular traffic diverted an adequate distance from excavation
- ☐ Spoil piles, equipment, and materials restrained or kept at least 2 ft (61 cm) from excavation edge
- ☐ Protection provided to prevent material from falling/rolling into excavation



- ☐ Safe means of egress provided every 25 ft (7.6 m) inside excavation
- ☐ Personnel entering excavation briefed and understand planned work and safety precautions
- ☐ Additional precautions taken when entering excavation to repair damaged or unstable protective systems

CH2M HILL Excavation-competent Person Name:

\_\_\_\_\_  
CH2M HILL Excavation-competent Person Signature:



## Attachment 5: OSHA Protective System Requirements Summary

### Sloping and Benching Systems

Sloping and benching systems must be designed by a registered professional engineer for excavations deeper than 20 feet (6.1 meters). System design for excavations 20 feet (6.1 meters) or less in depth must be selected and constructed by using one or more of the following options:

**Option 1:** Soil classification not required. Maximum allowable slope = 1-½ horizontal (H) to 1 vertical (V) or 34 degrees measured from the horizontal. Acceptable configurations are determined in accordance with Appendix B, Figure B-1.3 of OSHA 29 CFR 1926 Subpart P.

**Option 2:** Maximum allowable slope based on the soil classification type. A competent person must classify the soil as Stable Rock, Type A, Type B, or Type C soil based on at least one visual and at least one manual analysis. Acceptable test methods are outlined in Appendix A of CFR 1926 Subpart P. Acceptable configurations are determined in accordance with Appendix B, Figure B-1 of CFR 1926 Subpart P. The following table provides the maximum allowable slope based on soil classification.

Soil Type	Maximum Allowable Slope (H:V)
Stable Rock	Vertical (90 degrees)
Type A	¾ : 1 (53 degrees)
Type A – open less than 24 hours and 12' (3.7 m) or less deep	½ : 1 (63 degrees)
Type B	1 : 1 (45 degrees)
Type C	1-½ : 1 (34 degrees)

**Option 3:** Maximum allowable slope based on other tabulated data, such as tables and charts. The identity of the approving registered professional engineer must be stamped on the data. The tabulated data must be in written form, describing detailed information on its use and limitations, and must be at the job site during construction of the protective system.

**Option 4:** Sloping or benching designs prepared and approved by a registered professional engineer. The identity of the registered professional engineer who approved the data must be stamped on the design. The design must identify the project and the configurations must be determined safe for the project. The design documents must be at the job site during construction of the protective system.



### **Notes: Options 1 and 2:**

- The actual slope shall not be steeper than the maximum allowable slope.
- When the excavation shows signs of distress, the actual slope shall be reduced from the maximum allowable slope by  $\frac{1}{2}$  horizontal and 1 vertical ( $\frac{1}{2}H:1V$ ).
- When surcharge loads from operating equipment, traffic, stored material, and equipment are present, the competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope.

### **Shoring, Shielding, and Other Protective Systems**

Shoring, shielding, and other protective systems must be selected and constructed by using one of the following options. Soil classification using Appendix A of OSHA 29 CFR 1926 Subpart P is required for each option.

**Option 1:** Timber shoring design determined in accordance with the conditions and requirements of Appendix C of OSHA 29 CFR 1926 Subpart P. Aluminum hydraulic shoring design determined in accordance with Option 2, unless the manufacturer's tabulated data cannot be used. In such cases, Appendix D of OSHA 29 CFR 1926 Subpart P shall be followed. This option may be used only for excavations 20 feet or less in depth.

**Option 2:** Designs for protective systems determined in accordance with the specifications, recommendations, and limitations of the manufacturer's tabulated data. The manufacturer must issue written approval to deviate from these requirements and the approval must be available at the job site.

**Option 3:** Protective system designs determined using other tabulated data, such as tables and charts. The identity of the approving registered professional engineer must be stamped on the data. The tabulated data must be in written form, describing detailed information on its use and limitations, and must be at the job site during construction of the protective system.

**Option 4:** Protective system designs prepared and approved by a registered professional engineer. The identity of the registered professional engineer who approved the data must be stamped on the design. The design must identify the project and the configurations must be determined safe for the project. The design must be in written form, describing detailed information on its use and limitations, and must be at the job site during construction of the protective system.



## **Attachment 18**

### **Navy Region MidAtlantic Region Fire & Emergency Services Memorandum**



# NAVY REGION MID-ATLANTIC FIRE & EMERGENCY SERVICES

## MEMORANDUM

From: Chief, Fire Prevention  
To: Contractors Performing New Construction, Additions, or Renovations within the Navy Region Mid-Atlantic Fire & Emergency Services Complex

Subj: Construction Site Fire Prevention Requirements and Regulations

Encl: (1) Construction Site Fire Prevention Guidelines  
(2) CNRMA 11320.11, ROICC / NAVFAC PWC / CBU / CONTRACTOR Responsibilities  
(3) Preconstruction Conference Report

1. In accordance with Enclosure (2), contractors performing new construction, additions, or renovations to facilities within the Navy Region Mid-Atlantic Fire & Emergency Services complex are required to comply with reasonable base orders concerning Fire Prevention and Safety.

2. This guideline has been prepared to ensure applicable Fire Prevention Regulations are complied with, and will serve as a reference for any questionable matters concerning Fire Prevention and/or Fire Safety. In addition, construction sites will be inspected weekly by a Fire Prevention Inspector, as required.

3. The site specific Fire Prevention Offices are available if additional guidance is needed. However, contractors should first attempt to resolve any questionable matters regarding Fire Prevention with their ROICC Inspector. Telephone numbers for site specific Fire Prevention Offices are as follows:

a. SEWELLS POINT / LITTLE CREEK FIRE DISTRICT:

Little Creek: 462-2424

Sewells Point: 322-2416

b. PORTSMOUTH / PENINSULA FIRE DISTRICT:

Yorktown Naval Weapons Station and Cheatham Annex: 847-7872 / 3 / 4 / 5

Norfolk Naval Shipyard, Naval Hospital, St Julians Creek, and Craney

Island: 396-3338

Div. 396 3335

6

c. VIRGINIA BEACH DISTRICT:

Dam Neck: 492-6336

Oceana: 433-2407

for fire



4. All fires, regardless of size, will be reported to the base Fire Department by using a fire alarm pull box and telephone. Extinguished fires will also be reported, by telephone only.

5. TO REPORT A FIRE BY TELEPHONE, DIAL:

a. SEWELLS POINT / LITTLE CREEK DISTRICT:

Little Creek: 462-4444 / 4445

Sewells Point: 444-3333

b. PORTSMOUTH / PENINSULA DISTRICT:

Yorktown Naval Weapons Station and Cheatham Annex: 887-4911

Norfolk Naval Shipyard and St Julians Creek:

On base: 911 (396 and 967 exchanges ONLY)

Off base or commercial phone: 396-3333

Naval Hospital: 396-3333

Craney Island: 322-9911

c. VIRGINIA BEACH DISTRICT:

Dam Neck: 492-6333

Oceana: 433-9111



## NAVY REGION MID-ATLANTIC FIRE & EMERGENCY SERVICES

### CONSTRUCTION SITE FIRE PREVENTION GUIDELINES

#### 1. FIRE REPORTING

a. All fire will be reported to the site specific Fire Department, regardless of size.

b. TO REPORT A FIRE, DIAL:

(1) SEWELLS POINT / LITTLE CREEK DISTRICT:

Little Creek: 462-4444 / 4445

Sewells Point: 444-3333

(2) PORTSMOUTH / PENINSULA DISTRICT:

Yorktown Naval Weapons Station and Cheatham Annex: 887-4911

Norfolk Naval Shipyard and St Julians Creek:

On base: 911 (396 and 967 exchanges ONLY)

Off base or commercial phone: 396-3333

Naval Hospital: 396-3333

Craney Island: 322-9911

(3) VIRGINIA BEACH DISTRICT:

Dam Neck: 492-6333

Oceana: 433-9111

c. Extinguished fires will be reported by telephone only.

#### 2. FIRE EXTINGUISHERS

a. Fire extinguishers will be furnished and maintained by contractor, as required by Fire Department.

b. At least one approved fire extinguisher will be provided in plain sight on each floor at each usable stairway or exit.

c. Fire extinguishers located within the buildings will not be removed from their locations, except to fight a fire.

d. Suitable fire extinguishers will be provided on manned equipment utilizing liquid fuel.



### 3. FIRE PROTECTION EQUIPMENT

a. All Fire Protection equipment (alarm systems, sprinkler systems, fixed suppression systems) will be maintained in operating condition at all times, unless deactivation of a system is necessary in order to perform the required work, or if there is a possibility of accidental activation due to the nature of the work being performed. If this is the case, the ROICC Inspector will be responsible for contacting NAVFAC Public Works to have these systems placed in or out of service.

b. Any Fire Protection system placed out of service will be returned to service as soon as possible. Whenever an alarm system is placed out of service or returned to service, the Fire Department will be notified. Telephone numbers for non-emergency calls to the Emergency Communications Center / Fire Dispatch Offices are as follows:

(1) SEWELLS POINT / LITTLE CREEK DISTRICT:

Little Creek: 462-4445

Sewells Point: 444-2324

(2) PORTSMOUTH / PENINSULA DISTRICT:

Yorktown Naval Weapons Station and Cheatham Annex: 887-4676

Norfolk Naval Shipyard, St Julians Creek and Naval Hospital: 396-3335

Craney Island: 322-9086

(3) VIRGINIA BEACH DISTRICT:

Dam Neck: 492-6400

Oceana: 433-2224 / 3300

c. Fire hydrants will not be used for any purpose without permission from NAVFAC Public Works.

### 4. CONSTRUCTION / ALTERATION / RENOVATION SAFEGUARDS

a. When new buildings are erected and the fire main system must be extended to provide adequate protection, it is highly desirable that the fire main extension, together with hydrant installation, be provided prior to the actual construction of the building. In the event that such a procedure is not possible, a temporary extension of the fire main system will be made in order to provide a water supply adequate for firefighting operations per US ARMY CORPS OF ENGINEERS MANUAL EM 385-1-1.

b. During construction operations, temporary ladders and catwalks will be installed in such a manner as to afford safe and rapid access for firefighters as well as an exit for workers. As the work progresses, completion of permanent stairway enclosures and other structural features that help to prevent the horizontal and/or vertical spread of fire is of great importance.



c. If an automatic sprinkler system is to be permanently installed, the water supply for the system will be ready and the sprinkler heads promptly installed after completion of the interior finish. Blank flanges, used to permit sprinkler protection by sections as construction progresses, will have gaskets conspicuously marked to assure removal as the sprinkler system is extended.

d. During alteration or renovation projects, where the building is protected by fire protection systems, such systems will be maintained operational at all times during alteration / renovation if feasible.

EXCEPTION: Where alteration / renovation requires modification of a portion of the fire protection system, the remainder of the system will be kept in service and the Fire Department will be notified. When necessary to shut down the system, the Fire Department will have the authority to require alternate measures of protection until the system is returned to service. The Fire Department will be notified when the system is shut down and when returned to service.

e. Notification of fire protection system shut down or return to service will be made to the site specific Emergency Communications Center / Fire Dispatch. This notification will be made BEFORE systems are shut down or returned to service. Shutting down or returning to service any fire protection system will be the responsibility of a qualified NAVFAC Public Works mechanic, activity mechanic, or a qualified contractor.

f. Fire lanes will be provided at the start of a construction project and be maintained throughout construction for access.

EXCEPTION: Fire lane markings are not required until completion of the building project.

g. Liquid fuel powered equipment, such as air compressors, hoists, and pumps will be located so that exhausts are directed away from combustible materials. Liquid fueled engines will be shut off during refueling operations to prevent ignition of gasoline vapors or liquid from possible spills or overflow.

h. Temporary wiring for construction operations will be carefully installed and supervised by a competent electrician.

i. Temporary electrical wiring will be protected from cranes, shovels, trucks, traffic and other construction equipment.

j. Permanent wiring systems will replace temporary systems as soon as removal of formwork will permit.

k. Temporary heating devices will be properly used and situated so that they are not likely to overturn or come in contact with combustibles. Temporary heating devices will be listed / approved by a "nationally recognized testing laboratory" (NRTL). A permit



for operating a heater will be obtained from the site specific Fire Prevention office prior to use.

l. Liquid fuel heaters are commonly used for temporary heating, however, combustible material such as canvas weather protection, is frequently ignited by liquid fuel fire heaters that are improperly installed or supervised. Safe arrangements, however, are possible and the provisions for permanent heating plants or a temporary heating system can often be substituted for the more hazardous liquid fuel heaters. When liquid fuel heaters are used indoors, carbon monoxide levels will be within OSHA and industrial hygiene levels.

m. A standing fire watch will be maintained if the fire evacuation alarm system is required to be disconnected during alteration or renovation projects.

## 5. HOT WORKS

a. Contractors have full responsibility for ensuring all equipment is in good repair and properly and safely operated on projects.

b. To obtain an inspection and authorization permit, dial the site specific Emergency Communications center / Fire Dispatch (non-emergency telephone numbers are listed in 3b above). The Fire Prevention Office should be contacted for advice concerning any questionable Fire Prevention matters. Telephone numbers for site specific Fire Prevention Offices are listed in Section 3 of Memorandum above.

c. Fire watches for hot work operations are required and must be maintained for at least one-half hour after stoppage / completion of the operation.

d. Sites requiring extended hot work operation may, at the discretion of the Fire Protection Inspector, be issued a Hazardous Operation / Process Designated Site Authorization Permit. This permit would allow continuous hot work operations at sites designated for this purpose without requiring daily hot work permits. New construction projects, exothermic welding and tar kettles are excluded from this provision. The designated site permit may be revoked at any time if the Fire Inspector feels the site is no longer safe for this type of operation.

## 6. TAR KETTLES / TORCH APPLIED ROOFING

a. All tar kettles / torch-roofing operations will be inspected prior to use by a Fire Prevention Inspector. Before either operation can begin, an authorization permit is required and will be issued upon inspection to a competent operator. A warm-up permit will be required for tar kettles at the start of each week prior to an operating permit being issued. This is to ensure that the automatic thermostat control is functioning properly.



b. All tar kettles will be attended by a minimum of one employee knowledgeable of the operations and hazards. This employee must be within 25 feet and have the kettle in sight at all times. There must be two (2) approved, 20B:C-rated fire extinguishers within 25 feet of the kettle, accessible and visible at all times. Fuel tanks must be secured and equipped with an operational pressure gauge. Roofing kettles will be maintained in good working condition and will also be free of excessive residue. Fire watch will remain one-half hour after stoppage / completion of work.

c. All torch roofing operations will have at least one (1) multi-purpose 2A:20B:C-rated fire extinguisher within 20 feet horizontal travel distance of the torch applied roofing equipment. Fire watch will remain one-half hour after stoppage / completion of work.

d. To obtain an authorization permit, dial the site specific Fire Prevention Offices listed in Section 3 of Memorandum above.

## 7. FLAMMABLE / COMBUSTIBLE LIQUIDS

a. Flammable / combustible liquids will be stored outside of and a safe distance from any structure.

b. Flammable / combustible liquids for daily use will be procured as needed, with any surplus returned to storage at the end of the workday.

c. All flammable liquids will be kept in nationally recognized testing laboratories (NRTL)- listed / approved safety cans, properly labeled with contents, and stored in NRTL-listed / approved flammable storage cabinets.

d. Only NRTL-listed / approved manually operated barrel pumps will be used to transfer flammable liquids.

## 8. HOUSEKEEPING

a. Any accumulation of combustible materials (paper, packing materials, sawdust, etc) will be removed from the work site at the end of each day and properly disposed of.

b. Proper clearance from buildings or structures will be maintained, taking care to ensure that piles of lumber, and other materials to be used in construction, do not interfere with the right of way.

c. Designated areas will be established for the dumping of refuse materials.

d. Paint rags and other materials subject to spontaneous ignition require proper hazardous material disposal.



**CNRMA HRINST 11320.11**  
**ROICC / NAVFAC PWC / CBU / CONTRACTOR RESPONSIBILITIES**

**1. OFFICER (OICC) AND RESIDENT OFFICER IN CHARGE OF CONSTRUCTION (ROICC) RESPONSIBILITIES**

a. The OICC will provide liaison with the site specific Fire Prevention Office and contractors working on base to ensure proper fire prevention and protection requirements are followed within the scope of the contractor's responsibility to the government.

b. The ROICC will notify the site specific Fire Prevention Office of all new construction projects and dates or pre-construction conferences. A Fire Prevention representative will attend all pre-construction meetings.

**2. NAVFAC PUBLIC WORKS OFFICER CONSTRUCTION RESPONSIBILITIES**

a. The NAVFAC Public Works Officer will provide liaison with the site specific Fire Prevention Office and contractors, or Public Works Maintenance personnel, working on base with Public Works Construction Projects. This liaison is to ensure proper fire prevention and protection requirements are followed within the scope of the contractor's or Public Works Maintenance personnel responsibility to the government.

b. The Public Works Officer will notify the site specific Fire Prevention Office of all new construction projects and dates of pre-construction conferences. A Fire Prevention representative will attend all pre-construction meetings.

c. The Fire Prevention representative will provide the contractor or Public Works Maintenance personnel with information containing fire prevention instructions and fire safety precautions. This information will be maintained at the construction site.

**3. CONSTRUCTION BATTALION UNIT (CBU) OFFICER CONSTRUCTION RESPONSIBILITIES**

a. The CBU Officer will provide liaison with the site specific Fire Prevention Office and CBU personnel working on base with CBU projects to ensure proper fire prevention and protection requirements are followed within the project scope for responsibility to the government.

b. The CBU Officer will notify the site specific Fire Prevention Office of all new construction or renovation projects and dates of pre-construction conferences. A Fire Prevention representative will attend all pre-construction meetings.



c. The Fire Prevention representative will provide CBU personnel with information containing fire prevention instructions and fire safety precautions. This information will be maintained at the construction site.

#### 4. CONTRACTOR'S RESPONSIBILITIES

a. Past experiences emphasizes the necessity for coordination and cooperation between construction personnel and operating forces. On a lump sum contract, contractors have, by the terms of the contract, primary responsibility for the protection of their work. The contractor is responsible for all damage to persons, or to other property that occurs as a result of negligence in connection with the prosecution of the work. Contractors have absolute responsibility with regard to their own work, and must exercise reasonable care in the protection of other base property.

b. In addition, the contractor will be required to comply with reasonable base orders concerning fire prevention and safety.

c. The Fire Prevention representative will provide the contractor with information containing fire prevention instructions and fire safety precautions. This information will be maintained at the construction site.

#### 5. CONSTRUCTION / ALTERATION / RENOVATION

a. General:

(1) Construction projects pose many fire prevention and protection problems. During construction operations, many transient fire hazards are present. Fires that are not extinguished in the incipient stage are likely to spread more rapidly than they would in finished structures. In order to minimize the potential for fire, it is essential that proper fire prevention and safety practices be followed.

(2) Of primary importance are the provisions made for the early detection of fire and prompt notification of fire to site specific Emergency Communications Center / Fire Dispatch. Added precautions are required for the protection of projects that are remote from the site-specific location. In such cases, it may be necessary to resort to temporary or emergency measures in order to provide for fire protection. This dictates the necessity for indoctrination of all supervisory personnel in the fundamentals of fire protection and prevention measures necessary to create a safe environment during construction projects.



## Attachment 19

COMNAVREG MIDLANT Instructions 11300.1





## DEPARTMENT OF THE NAVY

COMMANDER  
NAVY REGION, MID-ATLANTIC  
1510 GILBERT ST.  
NORFOLK, VA 23511-2737

IN REPLY REFER TO:  
COMNAVREG MIDLANT  
INST 11300.1  
REG ENG/DRE  
**03 DEC 2004**

### COMNAVREG MIDLANT INSTRUCTION 11300.1

From: Commander, Navy Region, Mid-Atlantic

Subj: EXCAVATION AND MARKING OF SUBSURFACE UTILITIES

Ref: (a) 29 CFR 1926.650-652  
(b) Virginia Underground Utility Damage Prevention Act  
(VAC Title 56, Chapter 10.3)  
(c) Virginia Professional Excavators Manual, Miss Utility  
of Virginia  
(d) Virginia Underground Utility Marking Standards, Miss  
Utility of Virginia  
(e) COMNAVREGMIDLANTINST 11011.11

Encl: (1) Site and Utility Owner Information  
(2) Cable Installation Request (CIR)

1. Purpose. This instruction establishes a uniform procedure for marking subsurface utilities in the Navy Region, Mid-Atlantic area of responsibility so as to minimize damage to existing subsurface utilities as a result of excavations.

2. Scope. Commander, Navy Region, Mid-Atlantic (COMNAVREG MIDLANT) is the approval authority for excavation and marking subsurface utilities on Navy installations in the Mid-Atlantic Region. This instruction applies to all Navy installations within Virginia except the Norfolk Naval Shipyard and adjacent Southgate Annex and Scott Center sites. Navy installations in Pennsylvania are covered by local instructions tied to the laws of Pennsylvania and agreements associated with the privatization of utilities at the Philadelphia Navy Yard. All excavations shall comply with the requirements of reference (a) in addition to references (b), (c), and (d), found at <http://www.state.va.us/scc/division/>.

### 3. Definitions

a. Excavation. Any operation in which earth, rock, or other material in the ground is moved, removed, or otherwise displaced by means of any tools, equipment, or explosives, and



03 DEC 2004

includes, without limitation, grading, trenching, digging, ditching, dredging, drilling, auguring, tunneling, scraping, cable, or pipe plowing and driving, saw-cutting, soil borings, wrecking, razing, rendering, milling, horizontal boring, moving or removing any structure or mass of material.

b. Excavator. Applies to any Government forces, or contractor, military or civilian personnel, performing an excavation.

c. Utility. Applies to the following systems: water, electric, sewer, storm sewer, fiber optics, WAN/LAN, other communications cables, fire alarm, security alarm, steam, natural gas, cable television, compressed air, telephone, fuel/oils, street lighting, grounding mats, and lightning protection cabling. Although not technically utilities, the following environmental systems will also be marked: Oily Water-Waste Oil (OWWO) Piping; Intrinsic Remediation (IR) Wells; IR waste collection piping; and underground storage tanks.

d. Utility Operator. Applies to any Government or contractor owner or operator/maintainer of utility systems within the boundaries of Navy property. The following examples of operators in the region: FISC fuels, Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC MIDLANT) Utilities, Naval Computer and Telecommunications Area Master Station, Atlantic (NTCAMS LANT), Regional Environmental; Station Public Works Officers (PWOs); and Electronic Data Systems (NMCI).

#### 4. Discussion

a. All excavations must be approved through the site approval process outlined in enclosure (3) to reference (e) prior to entering into the excavation permitting process. All excavations must be thoroughly researched and cleared by local Utility Operators through the Virginia Utility Protection Services, Inc. (Miss Utility of Virginia, 1-800-552-7001) Notification System. The process of clearing areas for excavation is the responsibility of the Regional Engineer (REG ENG). The excavator is responsible for ensuring all Utility Operators have marked the proposed construction site prior to commencing any work per the guidelines set forth in reference (b). The excavator maintains the responsibility to dig carefully as well as liability for damage caused to utilities that have been properly located/marked during the excavation process.



03 DEC 2004

b. In the event of an emergency situation during normal working hours, 0700-1600, Monday through Friday, the excavator shall contact the NAVFAC MIDLANT Trouble Desk for the location of the excavation in addition to Miss Utility of Virginia at 1-800-552-7001. Station trouble desk contact information is provided in enclosure (1). Resident Officer in Charge of Construction (ROICC) contractors shall contact their ROICC representative, who will in turn contact the trouble desk.

c. In the event of an emergency situation outside of normal working hours, the excavator shall notify the NAVFAC MIDLANT Utilities Department Regional Operation Center in Building P-1, Naval Station, Norfolk at 445-6868, in addition to Miss Utility of Virginia.

5. Action. The following information identifies actions and responsibilities associated with the digging permit process:

a. Excavator. Is responsible for notifying Miss Utility of Virginia of any planned excavation on Navy property (and its easements) and obtaining clearance through the Miss Utility Notification Center prior to excavation. Ticket status through Miss Utility can be obtained by calling 1-800-552-3120.

(1) Excavator shall mark the limits of proposed excavation on the ground in white mark-out paint (or with wooden stakes in case of standing water or heavy rain conditions).

(2) If new utilities are installed or if the actual locations of the utilities uncovered differ from those marked, the excavator shall provide a copy of as-built drawings noting these new utilities or actual locations to the design agent or station PWO (when no design agent) upon completion of the work (via ROICC representative for ROICC contractors). This document shall serve as an as-built record of the excavation. The excavator shall exercise extreme caution during demolition/excavation. Location of the known existing utilities indicated on subsurface drawings is approximate. Should excavator uncover any items or artifacts that they suspect might have historical value, they are to stop all work immediately. Excavator will then be responsible for notifying the station PWO (through the station's trouble desk) who will then coordinate a site visit with the appropriate State Historic Preservation Office (SHPO) representative in order to determine the authenticity of the uncovered object. ROICC contractors shall contact their ROICC representative who will notify the station PWO. Only after receiving the approval of the SHPO representative will further excavation be permitted.



03 DEC 2004

(3) If the excavator intends to install communication lines on Navy property, approval must be obtained from NCTAMS LANT via the Cable Installation Request (CIR) (enclosure (2)).

b. Utility Operators. Organizations owning or operating subsurface utilities in the Navy's Mid-Atlantic Region on both Navy property and on Navy easements shall, without cost to excavators:

(1) Maintain up-to-date, reproducible records of all subsurface utilities for which the command is responsible, and make copies of these records available to Government commands and agencies and authorized excavators.

(2) Maintain an active account with Miss Utility of Virginia and receive, manage, and respond to all requests for marking of their subsurface utilities and structures within the timeframes outlined in the agreement with Miss Utility of Virginia.

(3) Provide Miss Utility of Virginia with current points of contact for subsurface marking of utilities.

(4) Mark subsurface utilities, per reference (d). Current color codes and symbols are indicated below for convenience. This work may be performed by Government forces or by contractors.

<b>Color Codes for Marking Subsurface Utility Lines</b>	
Safety Red	Electric power distribution and transmission
High Visibility Safety Yellow	Gas, oil, and petroleum products distribution and transmission, dangerous materials, product lines, and steam lines
Safety Alert Orange	Telecommunication systems, police and fire communications, cable television
Safety Precaution Blue	Potable water systems
Safety Green	Sewer systems and drain lines
Safety Precaution Purple	Reclaimed Water, irrigation, and slurry lines
White	Proposed excavation



03 DEC 2004

c. Design Agent, ROICC and Facility Support Contracts (FSC). These parties administer contracts and are responsible for ensuring that all of their contractors and their sub-contractors coordinate their excavations through Miss Utility of Virginia. Requirements must be addressed in all contract specifications prior to award process.

d. NAVFAC MIDLANT, Utilities Department Regional Operations Center, Building P-1, Norfolk. Receives after-hours emergency requests and notifies NAVFAC MIDLANT Command Duty Officer (CDO). Tracks response to after-hours emergency request and reports accomplishment to NAVFAC MIDLANT CDO.

e. PWO. Each station PWO shall be designated as a Utility Operator and maintain an active account with Miss Utility of Virginia for the purpose of identifying systems not owned by a specific government organization or third-party contractor (storm sewer systems, for instance). PWOs shall actively monitor ongoing excavations on their base through site visits and liaison with ROICC and Miss Utility of Virginia.

f. NCTAMS LANT. NCTAMS LANT Base Communications Office (BCO) will conduct a technical review and approve/disapprove CIRs within 10 working days of receipt.

6. Damages. Unknown subsurface utilities may exist which cannot be located by standard procedures. Extreme caution must be taken in areas where contract documents indicate the existence of utilities. Miss Utility of Virginia bylaws of reference (b) and contractual arrangements shall govern liability for damaged utilities associated with excavations on Navy property and easements.



F. F. AUCREMANNE  
Chief of Staff

Distribution: [www.cnrma.navy.mil](http://www.cnrma.navy.mil)



03 DEC 2004

## Point of Contact Listing

## NMCI Contacts

Site	Site Manager	Site Manager Office Number	Site Manager Cell Number	Site Manager Email
NSA Mechanicsburg	Lee Hetrick	(717) 791-2094	(717) 443-0915	lee.hetrick@eds.com
NSA Philadelphia	Pete Mastrovito	(215) 722-9400	(215) 651-8218	pete.mastrovito@eds.com
Chambers Field, Naval Station Norfolk	Kevin Potts	(757) 440-5523	(757) 615-2624	kevin.potts@eds.com
NAB Little Creek	Debra Helle	(757) 318-7238	(757) 576-1075	deb.helle@eds.com
Naval Station Norfolk	Dave Stack	(757) 963-1072	(757) 450-8880	dave.stack@eds.com
NAVSHIPYD Norfolk (shipyard)	Gabriela Rangel	(757)396-1510	(757) 635-5676	gabriela.rangel@eds.com
NSA Norfolk	Jim Williams	(757) 836-6907	(757) 575-6624	jwilli03@eds.com
NAS Oceana/Dam Neck Annex/St. Julien's Creek	Horace Moss	(757) 417-0475	(757) 371-5354	horace.moss@eds.com
NWS Yorktown/Cheatham Annex	Bill Yost	(757) 887-8250	(757) 344-6596	bill.yost@eds.com

Trouble Desks: P-1 is located at NAVSTA, 445-6868/9531 (after hours)

Installation Covered	Trouble Desk Location	Trouble Desk Telephone Number
NSA Northwest	Bldg. 38	(757)421-8110
NSA Norfolk (COMLANTFLT and Camp Allen)	Bldg. NH-140	(757)836-1478
Naval Station Norfolk	Bldg. Z-140	(757)444-4431
NAB Little Creek	Bldg. 3165	(757)462-7285 ext. 364
NAS Oceana/Dam Neck Annex	Bldg. 820	(757)433-2847
NWS Yorktown/Cheatham Annex	Bldg. 16	(757)887-4900
Naval Medical Center, Portsmouth	Bldg. 273	(757)953-5664
NAVSHIPYD Norfolk / St. Julien's Creek Annex	Bldg. 174, NNSY	(757)396-5856/5857
Regional Environmental Svc Desk (all stations)	Bldg. LP-24	(757)444-7528
Regional ECC/Fire Department (all stations)	Bldg N-26, NAVSTA	(757)444-2324/2326

## NCTAMS LANT POCs

Site	POC Name	Office Number	Cell Number
NSA Mechanicsburg	Bill Davis	(215)697-4000	(856)303-1448
NSA Philadelphia	Bill Davis	(215)697-4000	(856)303-1448
PNBC Philadelphia	Greg Radziewicz	(215)897-6823	(215)888-5432
NAS JRB Willow Grove	Lil Spurgeon	(215)443-6225	(215)249-8165
Naval Station Norfolk/NSA Norfolk	Sharon Armstrong	(757)443-9087	(757) 521-1001 (pgr)
NAB Little Creek	Sharon Armstrong	(757)443-9087	(757) 521-1001 (pgr)
NNSY Norfolk (shipyard)	Bob Harris	(757)396-1800	(757)621-6878
NSA Norfolk, Northwest Annex	Janet Dumont	(757)421-8787	(757)621-6877
NAS Oceana/Dam Neck Annex	Carol Hawkins	(757)433-3230	(757) 621-6876
NWS Yorktown/Cheatham Annex	Cheryl Davila	(757)887-7724	(757)621-6875

Enclosure (1)



03 DEC 2004

## Cable Installation Request

Date: \_\_\_\_\_

From: (Base serving the command/activity requesting service)

To: Commanding Officer, Naval Computer and Telecommunications  
Area Master Station, Atlantic (Code N2)

Subj: CABLE INSTALLATION REQUEST AT (Command/Activity or  
Site) \_\_\_\_\_

1. REQUESTING ACTIVITY: (command/activity requesting service)

2. BASE APPROVAL AUTHORITY: (Base Communications Officer at  
NTCAMS LANT)

3. PROJECT NUMBER: (assigned by base BCO/POC)

4. BASE POINT(s) of CONTACT:

POC NAME:

PHONE NUMBER:

FAX NUMBER:

INTERNET ADDRESS:

5. REQUIREMENT: (brief narrative)

6. PROJECT SUMMARY: (describe how project satisfies  
requirement)

7. PROJECT DESCRIPTION: (include drawings, full details of  
project, and site approval if required)

8. POA&M: (time/event based for cable installation)

9. ESTIMATED PROJECT COST (cable installation portion only): \$

10. ALTERNATIVE SOLUTIONS: (include reason for non-selection)

11. REMARKS:

Enclosure (2)



## Appendix B

### Quality Control Plan

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Final

Quality Control Plan

Non-Time-Critical Removal Action  
for Upper Reaches of Bousch Creek

Naval Station Norfolk  
Norfolk, Virginia

*Prepared for*

Department of the Navy  
Naval Facilities Engineering Command, Mid-Atlantic Division

*Under the*

AGVIQ/CH2M HILL JV II Program  
Contract N62467-03-D-0260  
Task Order 017

November 2007

*Prepared by*



Virginia Beach, Virginia



# Contents

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1	Quality Control Organization.....	1-1
2	Names and Qualifications .....	2-1
3	Duties, Responsibilities, and Authority of QC Personnel .....	3-1
4	Outside Organizations.....	4-1
5	Appointment Letters.....	5-1
6	Submittal Register .....	6-1
7	Testing Laboratory Accreditation .....	7-1
8	Testing Plan and Log .....	8-1
9	Procedures to Complete Rework Items.....	9-1
10	Documentation Procedures.....	10-1
11	List of Definable Features.....	11-1
12	Procedures for Performing the Three Phases of Control .....	12-1

## Figures

1-1	Organizational Chart
2-1	Site Quality Control Manager Resume
5-1	Site Quality Control Manager – Letter of Appointment

## Exhibits

4-1	Approved Consultant and Subcontractor List
6-1	Submittal Register
6-2	List of Personnel Authorized to Review and Certify Submittals
8-1	Testing Plan and Log
9-1	Rework Items Log
11-1	Quality Control Inspection Plan
12-1	Personnel Matrix



## SECTION 1

# Quality Control Organization

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The relationship between the Quality Control (QC) Organization and production personnel of TO 017 is provided in the Organizational Chart, Figure 1-1.



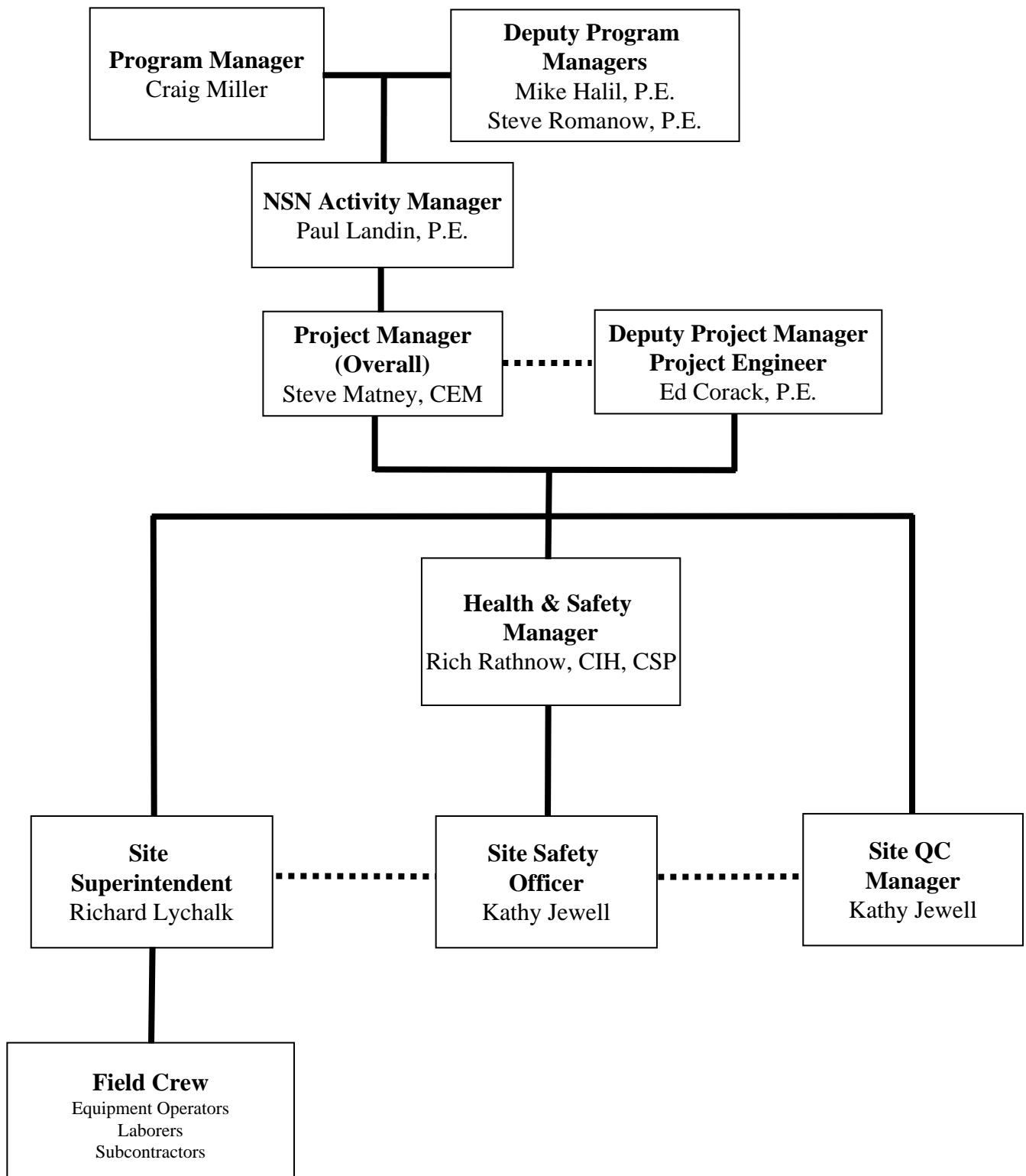


Figure 1-1 – Organizational Chart  
JV II Task Order 017  
Bousch Creek Sediment Removal Action  
Quality Control Plan  
Naval Station Norfolk, Norfolk, Virginia



## SECTION 2

# Names and Qualifications

---

Ms. Kathy Jewell is designated Site QC Manager for TO 017.

The Site QC Manager's resume is provided as Figure 2-1.



**Kathy Jewell**  
QA/QC Specialist  
CH2M HILL

## **EDUCATION**

### **Kent Stat University (Ashtabula, Ohio)**

- Two year Associates in Chemical Industry Business Management 1985

### **Akron University (Akron Ohio)**

1977

- Masters Degree Program in Social Services Planning (partial completion)

### **Kent State University (Kent Ohio)**

1974

- Four year BS in Secondary Education

## **RELEVANT EXPERIENCE**

### **CH2M HILL – QA/QC REPRESENTATIVE**

**June 2007 – Current**

- Manage site-specific QC requirements in accordance with the project plans and specifications
- Perform submittal review and approval including quality certifications and documentation
- Submit daily operational reports to site personnel and affiliated clients
- Perform and document air emission, SWP3 and SPCC inspections
- Collect, consolidate and report data from construction site equipment
- Updated SPCC site specific plan
- Maintain all QA/QC logs as per specifications

### **Millennium Chemicals – SAP SPECIALIST**

**1994 - 2003**

- SAP Expertise: SD – Sales & Distribution; MM – Materials Management; QM – Quality Management
- Implemented and/or streamlined business processes as defined by global executive management, developing report spec, business scripts and flow diagrams
- Designed, tested, trained and implemented a global B2C and a national B2B internet solution for customer ordering, delivery and billing processes in the US, Belgium and Australia
- Multi-site, multi-client global implementation and upgrades – Australia, Europe and the US

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**Figure 2-1 – QC Manager Resume**

**Page 1 of 2**

**JV II Task Order 017**

**Bousch Creek Sediment Removal Action**

**Quality Control Plan**

**Naval Station Norfolk, Norfolk, Virginia**



**Millennium Chemicals – SUPERVISOR – QUALITY CONTROL 1985 – 1994**

- Responsible for selecting customer products: quality specifications, load preparations and specialized requirements
- Responsible for documentation: Certificates of Analysis, Bills of Lading, Export requirements
- Processed orders averaging 20 to 25 truckloads of product daily (400 to 500 tons of product)
- Supervised 25+ lab technicians (levels I, II, and III) in a 24/7 multifunctional chemical laboratory
- Responsible for all equipment, testing procedures and training for all four laboratories

**Millennium Chemicals – TECHNICIAN – QUALITY CONTROL 1979 – 1985**

- Performed in all laboratory areas – Control, Paper, Paint, Plastics and Analytical labs
- Performed all customer specialized tests as required
- Implemented two new laboratory areas, established all test frequency plans and trained all technicians.

**PROFESSIONAL DEVELOPMENT**

- Standard First Aid and Adult CPR Certification
- CH2M HILL Site Safety Coordinator Training
- 40-Hour OSHA HAZWOPER Training
- U.S. Army Corps of Engineers QA/QC Construction Training
- SAP Functions: SAP Overview; Master Data, Customer Order Management, Delivery Processing; Billing; Quality Management; Batch Determination; Certificate profiles
- Prism Functions: Customer Order Management, Inventory Management, Quality Management, Foundation
- Zenger Miller: Frontline Leadership Supervisory Training, Quality Enhancement through Skills; Facilitating for Results
- National Seminars: How to Handle Conflict and Manage Employee Anger in a Supervisory Role; How to Manage Multiple Tasks

**Personnel Data**

Years Experience Previous to CH2M HILL: 25

CH2M HILL Hire Date: June 2007



### SECTION 3

## Duties, Responsibilities, and Authority of QC Personnel

---

QC personnel will implement and maintain an effective QC Plan. The appointed Site QC Manager will not be appointed as the safety competent person as defined by EM 385-1-1.

The Site QC Manager is the manager of all QC activities. The Site QC Manager is required to conduct QC meetings, perform the three phases of control, perform submittal review and approval, ensure testing is performed, and provide the QC certifications and documentation required in this contract. The Site QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by the QC specialists, testing laboratory personnel, and any other inspection and testing personnel required by this contract.

No construction work or testing may be performed unless the Site QC Manager or representative is on the work site. The Site QC Manager shall report to an officer of JV II and shall not be subordinate to the Site Superintendent. The Site QC Manager and Site Superintendent must work together effectively. Both the Site QC Manager and Site Superintendent will be held responsible for the quality of work on the job.



#### SECTION 4

## Outside Organizations

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Outside organizations such as subcontractors employed by JV II for work under this task order is provided in Exhibit 4-1, which lists each firm's name and address and describes the services each firm will provide. This list will be maintained current and will be available for review.



## Exhibit 4-1

## Approved Consultant and Subcontractor List

[illegible]



## SECTION 5

# Appointment Letters

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The Site QC Manager appointment letter is provided as Figure 5-1.



November 5, 2007

Ms. Kathy Jewell  
CH2M HILL  
5700 Cleveland St, Suite 101  
Virginia Beach, VA 23462

RE: Site QC Manager  
Contract N62467-03-D-0260, TO-017

Dear Ms. Jewell,

This letter will serve as your appointment as the Site Quality Control Manager on the referenced project and will also clarify your duties and authority in this position. In this position, you will be authorized to use available resources to satisfy all applicable requirements of the Program and Task Order Quality Control Plans.

This authorization specifically gives you the authority to direct removal and replacement or correction of nonconforming materials or work and stop work authority when continuation would be unsafe to personnel, harmful to the environment, or result in a significant degradation of quality.

You will be expected to work closely with the Program Manager, Site Superintendent and other project personnel, but you will not be directly responsible to anyone but me for resolution of quality issues when working in the capacity of Quality Control Manager.

If you have any question in the matter, please contact me.

Respectfully,

Steve Romanow, P.E.  
Deputy Program Manager  
CH2M HILL  
15010 Conference Center Drive, Suite 200  
Chantilly, Virginia 20151

---

**Figure 5-1 – QC Manager Appointment Letter  
JV II Task Order 017  
Bousch Creek Sediment Removal Action  
Quality Control Plan  
Naval Station Norfolk, Norfolk, Virginia**



## SECTION 6

# Submittal Register

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The Initial Submittal Register is provided as Exhibit 6-1. The status of each submittal will be recorded. The Submittal Register will be maintained and submitted at the end of each month.



## EXHIBIT 6-1

### SUBMITTAL REGISTER

CONTRACT NO.  
**N62467-03-D-0260, Task Order 017**

TITLE AND LOCATION	
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Bousch Creek Sediment Removal, Naval Station Norfolk, Norfolk, Virginia

CONTRACTOR

**Agviq - CH2M HILL Joint Venture II**

[illegible]



Exhibit 6-2

List of Personnel Authorized to Review and Certify Submittals

Specification Section	Submittal Type	Authorized Personnel
N/A	All	Site QC Manager
N/A	All	Project Engineer



## SECTION 7

# Testing Laboratory Accreditation

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Testing laboratory accreditation requirements are addressed in the JV II contract, which governs TO 017. Construction materials-testing laboratories performing work for Navy construction contracts must be accredited by one of the laboratory accreditation authorities. The laboratory's scope of accreditation must include the ASTM standards listed in the paragraph titled "Construction Materials Testing Laboratory Requirements" as appropriate to the testing field. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office."



## SECTION 8

# Testing Plan and Log

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A Testing Plan and Log has been prepared for the TO and is provided as Exhibit 8-1.



EXHIBIT 8-1 TESTING PLAN AND LOG						CONTRACT NO. N62467-03-D-0260, Task Order 017						
TITLE AND LOCATION Bousch Creek Sediment Removal, Naval Station Norfolk, Norfolk, Virginia						CONTRACTOR Agviq - CH2M HILL Joint Venture II						
SPECIFICATION SECTION AND PARAGRAPH NUMBER	ITEM OF WORK	TEST REQUIRED	ACCREDITED APPROVED LAB		SAMPLE D BY	TESTED BY	LOCATION OF TEST		FREQUENCY	DATE COMPLETED	DATE FORWARDED TO CONTR. OFF.	REMARKS
			YES	NO			ON SITE	OFF SITE				
	Waste Identification: <i>Analyses shall conform to local, state, and federal criteria as well as to the requirements of the disposal facility.</i>	Full TCLP							As required by disposal facility (every 2,000 CYDs)			
		TPH										
		PCBs										
		Additional tests required										
		by disposal facility										
	Off-Site Backfill Material	VOCs							Once per source			
		SVOCs										
		Pest/PCBs										
		Metals										
		TPH										



## SECTION 9

# Procedures to Complete Rework Items

---

Rework Items will be documented on the Daily QC Report and on the Rework Items list, which is provided as Exhibit 9-1. This will be used to report and track rework Items. The Rework Items list will be submitted at the end of each month.



[illegible]



## SECTION 10

# Documentation Procedures

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The following reports will be required:

### Daily

QC Report, Contractor Production Report

### Biweekly

QC Meeting Agenda, QC Meeting Minutes

### Monthly

Submittal Register (Exhibit 6-1), Testing Plan and Log (Exhibit 8-1), Rework Items (Exhibit 9-1)

Documentation will be completed as discussed in ER 1180-1-6, "Construction Quality Management," U.S. Army Corps of Engineers (30SEP95).



## SECTION 11

# List of Definable Features

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The Quality Control Inspection Plan, Exhibit 11-1, lists each specification section and definable feature of work with provisions for recording the corresponding checklist/report for each phase of the three-phase control process. As each control phase is satisfactorily performed, the Site QC Manager will record the corresponding checklist/report number and date.

*Note: A definable feature of work is a task that is separate and distinct from other tasks and requires separate control procedures.*

This list has been prepared to correspond to the activities of the project schedule. The list will be agreed upon during the Coordination and Mutual Understanding Meeting. The list will be keyed to the construction schedule. Each preparatory, initial, and follow-up phase checklist/report will reflect the construction activity number derived from the construction schedule.



<b>EXHIBIT 11-1</b> <b>Quality Control Inspection Plan</b>	CONTRACT NO. <b>N62467-03-D-0260, Task Order 017</b>
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CONTRACT NO.  
**N62467-03-D-0260, Task Order 017**

TITLE AND LOCATION
Bousch Creek Sediment Removal, Naval Station Norfolk, Norfolk, Virginia

CONTRACTOR
Agviq - CH2M HILL Joint Venture II

[illegible]



## SECTION 12

# Procedures for Performing the Three Phases of Control

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The Site QC Manager will prepare and maintain the personnel matrix, Exhibit 12-1, showing each section of the TO specification with identification of who will review and certify submittals, who will perform and document the three phases of control, and who will perform and document testing. This matrix should be completed as much as possible prior to and during site mobilization. The matrix will be maintained current by the Site QC Manager and will be available for review.



## Exhibit 12-1

### Personnel Matrix

[illegible]



## Appendix C

# Erosion and Sediment Control Plan

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Final  
Erosion and Sediment Control Plan  
Removal Action  
for Upper Reaches of Bousch Creek

Naval Station Norfolk  
Norfolk, Virginia

*Prepared for*

Department of the Navy  
Naval Facilities Engineering Command, Mid-Atlantic Division

*Under the*

AGVIQ/CH2M HILL JV II Program  
Contract N62467-03-D-0260  
Task Order 017

*Prepared by*



Virginia Beach, Virginia

December 2007



# Erosion and Sediment Control Plan

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This Erosion and Sediment Control Plan (ESCP) has been prepared in accordance with the *Virginia Erosion and Sediment Control Handbook, 3<sup>rd</sup> Ed*, 1992, to develop practices and procedures to be implemented to control the adverse impacts associated with soil erosion and sedimentation during the environmental removal action planned for Upper Reaches of Bousch Creek at Naval Station Norfolk (NSN) in Norfolk, Virginia.

## 1.1 ESCP Figures and Drawings

The following figures and drawings are included in this ESCP:

Figure 1:	Location of Bousch Creek, Sediment Removal Areas, and Vicinity Sites
Figure 2:	Primary and Secondary Removal Areas (Phases I, II, and III)
Drawing G-1: (Sheet 1 of 6)	Title Sheet, Index to Drawings, Vicinity/Location Maps, and Detail Designation Legend
Drawing C-1: (Sheet 2 of 6)	Site Plan, Abbreviations, Legend, and General Notes
Drawing ES-1: (Sheet 3 of 6)	Erosion and Sediment Control Plan (Phase I)
Drawing ES-2: (Sheet 4 of 6)	Erosion and Sediment Control Plan (Phase II)
Drawing ES-3: (Sheet 5 of 6)	Erosion and Sediment Control Plan (Phase III)
Drawing SD-1: (Sheet 6 of 6)	Standard Details

## 1.2 Site Description

The following provides a brief description of NSN and Bousch Creek. Refer to the CH2M HILL (August 2007) Bousch Creek EE/CA the CH2M HILL (July 2007) NSN Site Management Plan for FY07 for additional site description and background.

### 1.2.1 Naval Station Norfolk

NSN is the largest naval base in the United States and is situated on 4,631 acres of land in the northwestern portion of Norfolk, Virginia. NSN is bounded by Willoughby Bay to the north, the confluence of the Elizabeth and James Rivers to the west, and the City of Norfolk to the south and east. A portion of the eastern facility boundary is formed by Mason Creek (Drawing G-1).

NSN includes approximately 4,000 buildings, 20 piers, and an airfield. The western portion of the facility is a developed waterfront area containing the piers and facilities for loading, unloading, and servicing naval vessels. The remaining portions of the facility consist of a



combination of industrial, commercial, and residential uses. Residential and recreational areas also border the facility to the south, east, and northeast. NSN provides support to vessels, aircraft, and other activities. NSN also houses many tenants, each performing different operations involving the servicing and maintenance of vessels and aircraft.

### **1.2.2 Bousch Creek**

All Bousch Creek history and investigations relate to the nearby sites. Nearby Installation Restoration Program (IRP) sites that border either Bousch Creek or its tributaries include the CALF (Site 1), the CD Landfill (Site 6), and the Camp Allen Salvage Yard (CASY) (Site 22) (Figure 1). These sites plus stormwater flow are the principal source areas or activities that may impact (or may have in the past) ecological receptors in Bousch Creek.

The ecological risk assessments for the upper and upper-middle reaches of Bousch Creek concluded relatively high risks to benthic invertebrate receptors in the upper reaches of the creek (Primary Area) due to metal exposures from sediments (Figures 1 and 2). The metals-impacted sediments in the Primary Area are thought to be related to historical site practices at the CALF. The report also concluded that moderate to high risks to benthic invertebrate receptors in the upper-middle portion of the creek (Secondary Area) are possible, most likely due to polycyclic aromatic hydrocarbon (PAH) exposures from sediments (Figures 1 and 2). The report concluded that the PAHs were not likely related to the CALF. The CH2M HILL (2007b) EE/CA recommended the excavation of contaminated sediments and the replacement with clean backfill.

### **1.2.3 Existing Site Conditions, Topography, and Drainage**

NSN's topography is nearly level. Surface elevations at the base range from sea level to about 15 ft above mean sea level (msl) in the base's central portion. The majority of surface water at NSN flows to either Mason Creek or the remnants of Bousch Creek. The main channel of Bousch Creek was filled during the development of NSN and replaced by a network of drainage ditches and underground culverts.

The CALF is a closed landfill with a vegetative cover that is regularly mowed. The banks of Bousch Creek are heavily vegetated with overgrown brush and are mostly lined with trees. The ground surface is relatively flat, with some minor elevated areas in the center of the landfill. Precipitation that does not evapotranspire or infiltrate into the ground surface at the site drains to Bousch Creek. Bousch Creek is tidally influenced by Willoughby Bay but also provides drainage for the areas surrounding the CALF area of NSN.

Construction activities associated with the planned sediment removal activities are limited to the upper reaches of Bousch Creek. The Primary Area is immediately adjacent (north of) CALF (Figures 1 and 2). The Secondary Area is north of highway I-564 in an area of Bousch creek that contains open channel between a culvert passing underneath the highway and culvert that extends from the NSN airfield north/northeast to Willoughby Bay (Figures 1 and 2).



## 1.3 Project Description

This project includes the excavation of approximately 7,780 cubic yards (estimated to be approximately 12,440 tons for disposal) combined of sediments from the Primary and Secondary Areas of Bousch Creek (Figures 1 and 2). The Primary Area consists of approximately 1,600 linear feet (ft) of creek and the Secondary Area consists of approximately 800 linear ft of creek. The width of the creek is expected to vary but has been estimated at 30 ft throughout for planning purposes. The removal of 2 ft of sediment from the creek bottom will require clearing of vegetation along the bank of the creek to provide equipment access. With the exception of construction traffic, the activities at Bousch Creek are not anticipated to affect surrounding areas. Close coordination will be required with the Navy. Disturbed areas will include the area immediately adjacent to one side of the creek to allow for equipment access, temporary access roads, and material handling/staging/drying areas. Upon completion of activities disturbed areas will be re-seeded with native grasses ; however, trees will not be re-planted.

Activities within Bousch Creek will require the installation of temporary portable aquadam-type systems (water filled bladders sizes range from 6 ft height to 35-45 ft in length-closed-ended) and pipe plugs to isolate the excavation work areas from perennial water flow influenced by drainage from surrounding bodies of surface water. To dewater the excavation areas, a bypass system using pumps and hoses will be implemented to remove and discharge creek water using filter bags at discharge points when sediment becomes entrained (to carry suspended solids) during pumping. Additional measures may be implemented to slow the discharge velocity to prevent scour of bottom sediments, such as filtering through hay bales or equivalent. All soil stockpile areas will be lined and bermed to create a sediment drying cell and prevent commingling and migration of soils with stormwater runoff. Other erosion and sediment control measures that will be utilized during construction activities include silt fence on the down-slope side of disturbed areas and the stabilized construction entrances.

The critical area(s) at the site will be the creek itself, which has the potential to carry sediments away from the project area in surface waters if proper measures are not implemented during excavation of sediments from the bottom of the creek. Staging and drying areas to be constructed (on the CALF for the Primary Area [Drawings C-1 and ES-1] and on the unused open field northeast of the Secondary Area [Drawing ES-3]) for excavated sediments will be lined and bermed to provide for containing any water that drains from the sediment. Temporary access ways for hauling trucks will include stabilized construction entrances and stabilized temporary roads so that no off-road maneuvering is required.

Figure 2 presents the three-phase concept for the sediment removal action to be completed as related to surface water management and the implementation of erosion and sediment control measures. Due to seasonal tidal influences and the delays experienced with the clearing operations the sequence of construction may change. Pending tidal action and clearing delays, the JV may decide to complete the activity in the concrete-lined channel first.



- Phase I: The portion of the Primary Area immediately north of CALF
- Phase III: The concrete-lined portion of the Primary Area
- Phase III: The Secondary Area (PAH Area) adjacent to I-564 and northwest of the NSN flight line.

## 1.4 Erosion and Sediment Control Measures

Clearing activities along Bousch Creek to provide for equipment access will include felling trees as required (Drawings C-1, ES-1, ES-2, and ES-3); however, grubbing and disposal of root balls will not be completed. The intent of leaving tree roots in place is to minimize disturbance, particularly to the banks of the creek on the side from which equipment will access the sediments. The opposite bank will not be disturbed.

After clearing operations, a 36-inch fabric silt fence will be installed down-slope of disturbed areas to contain sediment in stormwater runoff. Silt fence will also be installed along the top of the creek bank to prevent areas disturbed at the top of slope for equipment access in Phases I and III. Silt fence will also be installed around areas designated as clean fill stockpile areas to be used as backfill within the creek. All erosion and sediment controls will be established, inspected, and maintained in accordance with the *Virginia Erosion and Sediment Control Handbook, 3<sup>rd</sup> Ed, 1992*.

Stormwater runoff along the bank will drain into the creek where the Aquadams® will prevent the release of sediment runoff into the lower reaches of Bousch Creek during the excavation of sediments. Surface water contained between the aquadams during operations will be pumped out of the work area and discharged downstream into unexcavated areas through filter bags at low velocity as described below.

The excavation areas will be pumped out as practicable and feasible to ensure the driest conditions during excavation without causing sediment entrainment during pumping. Filter bags will be used during dewatering and bypass operations when stream water levels reach approximately 6 inches from the sediment surface or when turbidity is visually confirmed (i.e., muddy water will not be pumped). Additional measures may be implemented to slow the discharge velocity to prevent scour of bottom sediments, such as filtering through hay bales or equivalent. Nuisance water will not be discharged over the site across unstabilized, vegetated surfaces, or stormwater inlets. Waters will only be discharged back into Bousch Creek outside of work areas. Any water intrusion experienced in the open excavation area will not be pumped out prior to backfilling with clean fill. The phased approach is described below:

- **Phase I (Primary Area east-west portion along CALF) (Drawing ES-1):** Portable dams (water-filled dams referred to as Aquadams) will be installed at the most eastern end of Phase I. A plug or plugs will be installed in the pipe(s) at the western end connecting Phase I to the concrete-lined channel (Phase II). A water bypass system will be set up to move water accumulating at the eastern end to discharge downstream of Phases I and II. Water from the isolated excavation area will be pumped downstream through filter bags during conditions described above. Turbidity curtains will not be installed along this section of the Primary Area because it will be a near-dry excavation using Aquadams® (excavation areas are



ultimately self-contained basins); muddy water will not be pumped; and sediment-entrained water will only be pumped through filter bags.

- **Phase II (Primary Area north-south concrete lined channel) (Drawing ES-2):** Aquadams will be installed at the most northern and southern ends of the concrete-lined channel. A plug or plugs may be used to stop water flow from pipes/outfalls located in the concrete-line channel. Water from the isolated excavation area will be pumped downstream through filter bags during conditions described above. The water bypass system utilized for Phase I will continue to operate during the Phase II excavation activities. Turbidity curtains will not be installed along this section of the Primary Area because it will be a near-dry excavation using Aquadams® (excavation areas are ultimately self-contained basins); muddy water will not be pumped; and sediment-entrained water will only be pumped through filter bags.

If flooding is visually identified in any downstream area, the water bypass system will be re-directed to pump into an alternate downstream area. Dams and plugs would still be in-place to prevent flooding to the CALF Treatment Plant (Building CA-230).

- **Phase III (Secondary Area) (Drawing ES-3):** This portion of Bousch Creek will be excavated as a wet dig. Dewatering will not occur in this area during the removal action. Turbidity curtains will be installed at the up- and downstream endpoints of the Phase III excavation area.

The excavation operations will consist of removing sediment in bucket-loads using a long-reach excavator and placing the removed soils at the toe of the creek slope for preliminary dewatering. This soil will be transferred to off-road dump trucks and transported to the onsite excavated soil stockpile area where the soil will be allowed to decant (dewater) into a lined, bermed drying cell. Any accumulated water in the stockpile area(s) remaining after the drying period will be containerized into portable polyethylene or drums, analytically tested, and (a) disposed offsite and/or (b) disposed at the CALF Plant once approved by Navy and coordinated with the CALF Treatment Plant operator.

Because sediments removed from Bousch Creek will be extremely wet, temporary containment cells (estimated to be 100 ft by 100 ft, but actual size will be determined in the field) will be constructed for each of the Primary and Secondary Areas to place the wet sediments in to dewater as described above. A heavy gauge liner material will be spread over the ground surface. Hay bales will be placed around the perimeter of the temporary containment cell. After the hay bales are secured to the ground with wooden stakes, the liner will be draped up and over the secured hay bales and secured with sand bags or equivalent on the exterior side of the hay bales to prevent movement. If necessary, wet sediment may be mixed with wood chips (derived from clearing operations) to aid in drying. In addition, a drying and bulking agent such as portland cement may be used only if necessary for offsite disposal. Portable polyethylene tanks will be used for the storage of any remaining dewatered fluids and disposed as described above.

Permanent site stabilization will include the installation of biodegradable jute mesh on disturbed slope areas and seeding with native grasses as specified by USEPA Region 3. Silt



fence or other erosion and sediment control measures will remain in place until site restoration is complete, including the establishment of vegetation (where appropriate).

## 1.5 Construction Sequencing to Facilitate Erosion and Sediment Controls

Construction activities at Bousch Creek are planned such that tasks will be completed to prevent release of sediment to surrounding areas. The erosion and sediment control drawings demonstrate the location and type of erosion and sediment control measures. The anticipated phased construction sequence would be as follows:

### *Phase I*

1. Clearing.
2. Installation of silt fence along the south side of the stream.
3. Construction of stabilized construction entrance and access road.
4. Containment cell construction for dewatering/bulking of excavated sediments.
5. Excavation of creek bottom sediments (2 ft).
  - a. Aquadam will be installed at low tide on the upstream end and the concrete culvert pipes will be plugged on the downstream end to isolate the Phase I excavation area. The intent is to minimize segmentation of the excavation area; however, sub-excavation areas (additional dams) may be necessary if water accumulation is observed on the upstream end.
  - b. Installation and startup of creek water bypass system for Phases I and II.
6. Backfill with clean fill in creek bottom (1 ft).
7. Site restoration: Seeding of disturbed areas with native species. Installation of jute mesh.

### *Phase II*

1. Limited clearing for equipment access (the drying/staging areas and temporary access roads for Phase I will also be used for Phase II).
2. Excavation of sediments from concrete lined portion.
  - a. Aquadams will be installed at low tide on the upstream and downstream extent of excavation limits to isolate individual work areas.
  - b. Installation of turbidity curtains up- and downstream of the aquadams.
  - c. The intent is to minimize segmentation of the excavation area; however, sub-excavation areas (additional dams) may be necessary if water accumulation is observed on the upstream and downstream ends.
  - d. Maintain creek water bypass system for Phases I and II.
3. Based on field observation, it appears that a concrete floor is present and the sediment thickness appears to be less than 2 feet throughout the channel. Therefore, clean backfill will not be placed into the concrete-lined portion. However, should



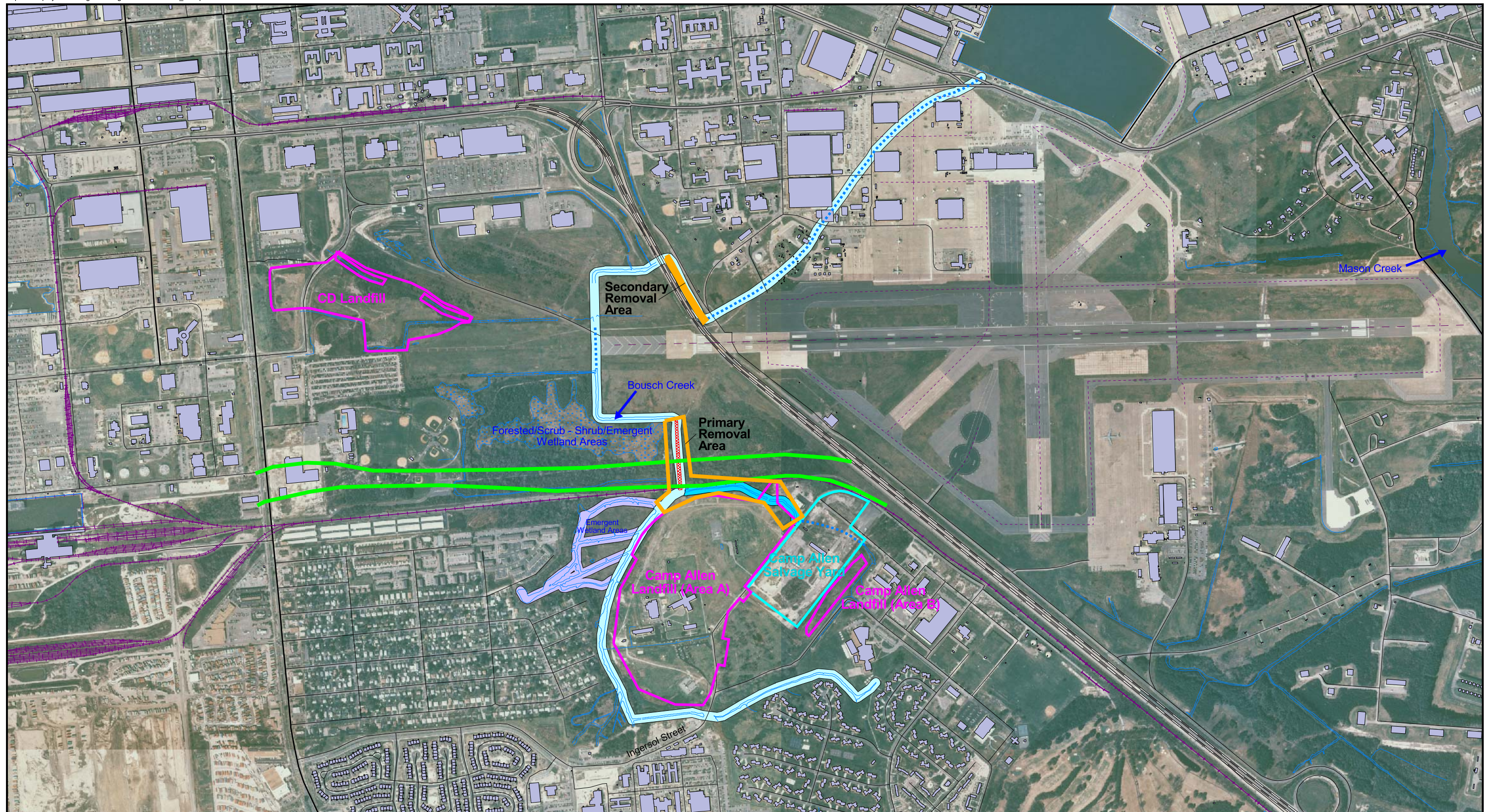
conditions differ from initial field observation, this approach for sediment removal in the channel may be revisited.

7. Site restoration: Seeding of disturbed areas with native species. Installation of jute mesh.

### *Phase III*

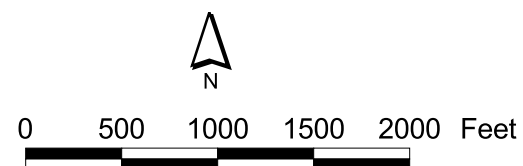
1. Limited clearing.
2. Installation of silt fence.
3. Construction of stabilized construction entrance and access road.
4. Containment cell construction for dewatering/bulking of excavated sediments.
5. Installation of turbidity curtains up- and downstream.
6. Excavation of 2 ft of creek bottom sediments (“wet” excavation due to channel width and depth).
7. Backfill with clean fill in creek bottom (1 ft).
8. Site restoration: Seeding of disturbed areas with native species. Installation of jute mesh.





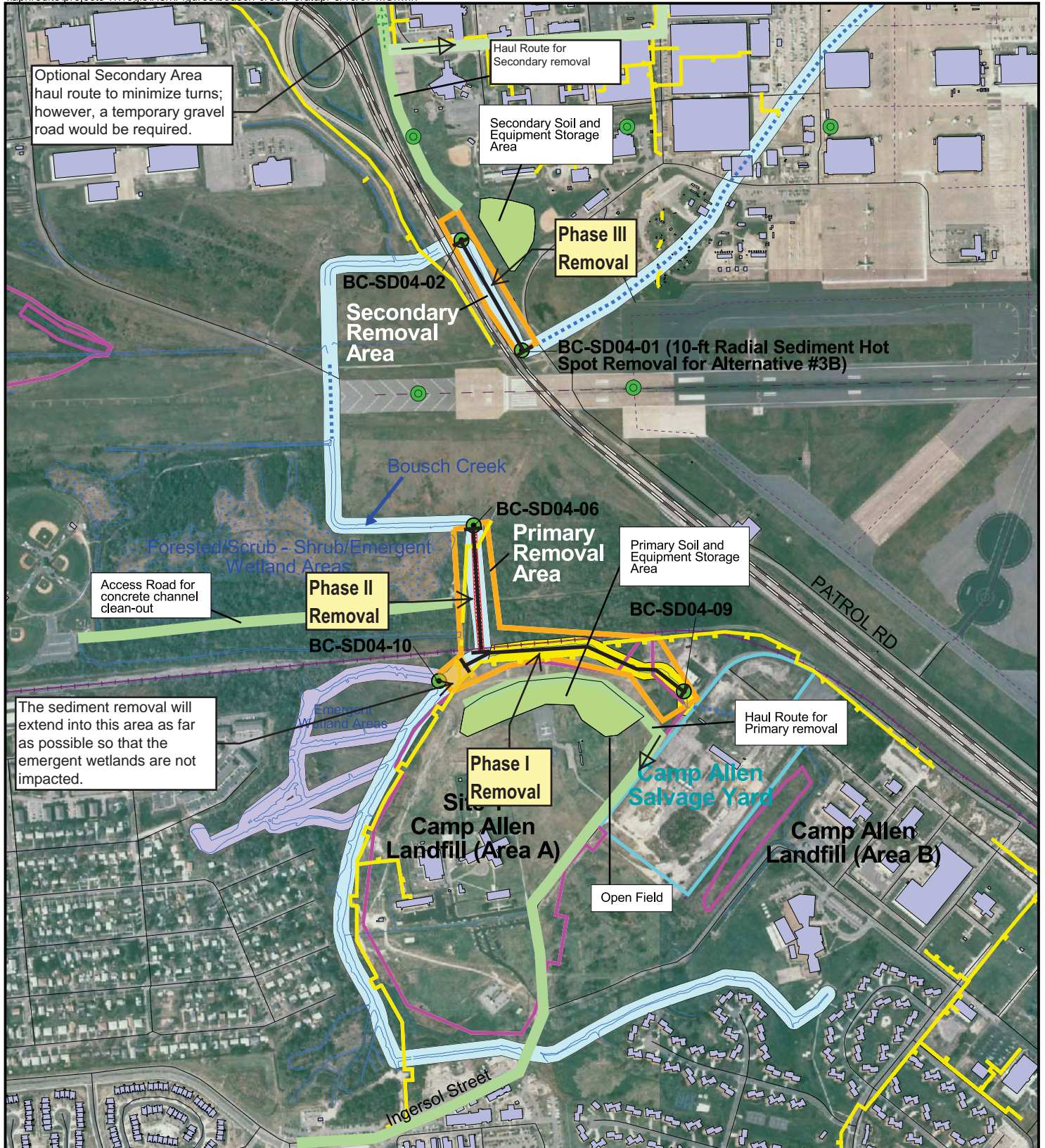
# **LEGEND**

- █ Proposed I-564 Corridor (Approximate)
- ▬ Underground Culvert
- ▨ Concrete Lined
- ▨ Sediment Removal Area
- ▬ Eastern Branch Bousch Creek
- ▬ Western Branch Bousch Creek
- ▬ Main Branch Bousch Creek



**Figure 1**  
**Location of Bousch Creek, Sediment**  
**Removal Areas, and Vicinity Sites**  
**Bousch Creek ESCP**  
**Naval Station Norfolk**  
**Norfolk, Virginia**

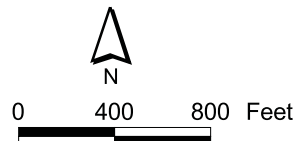




# **LEGEND**

- Underground Culvert
- Steam Lines
- Concrete Lined
- Sediment Removal Area
- Outfall
- Sediment Sampling Location
- Haul Routes

- Eastern Branch Bousch Creek
- Western Branch Bousch Creek
- Main Branch Bousch Creek



**Figure 2**  
Primary and Secondary Sediment Removal Areas  
(Phases I, II, and III)  
Bousch Creek ESCP  
Naval Station Norfolk  
Norfolk, Virginia

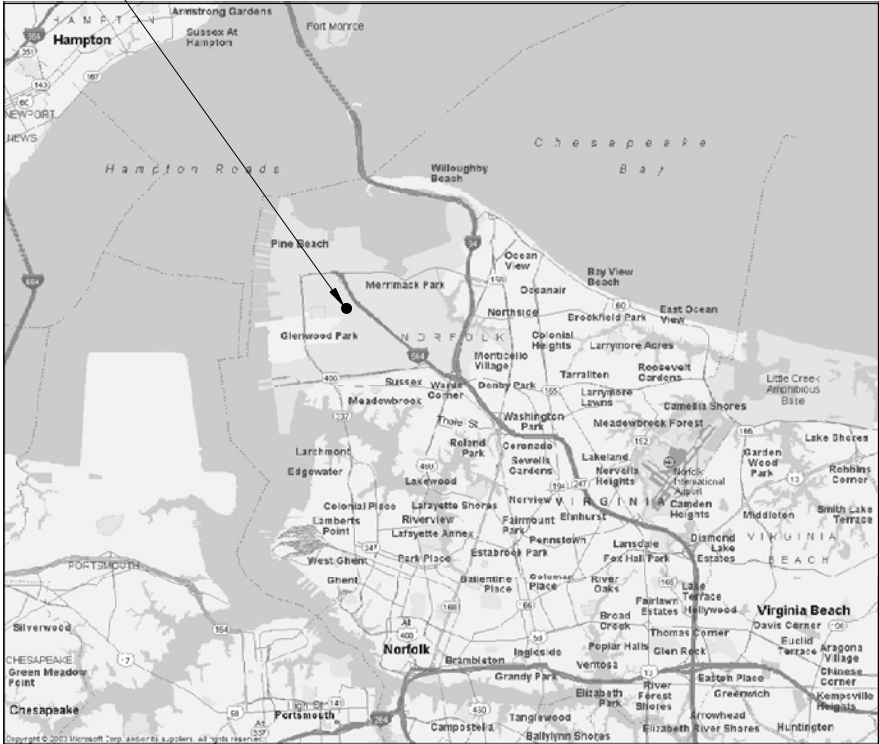


BOUSCH CREEK  
ECOLOGICAL ACTION  
EROSION AND SEDIMENT CONTROL PLAN  
NAVAL STATION NORFOLK  
NORFOLK, VIRGINIA

INDEX TO DRAWINGS

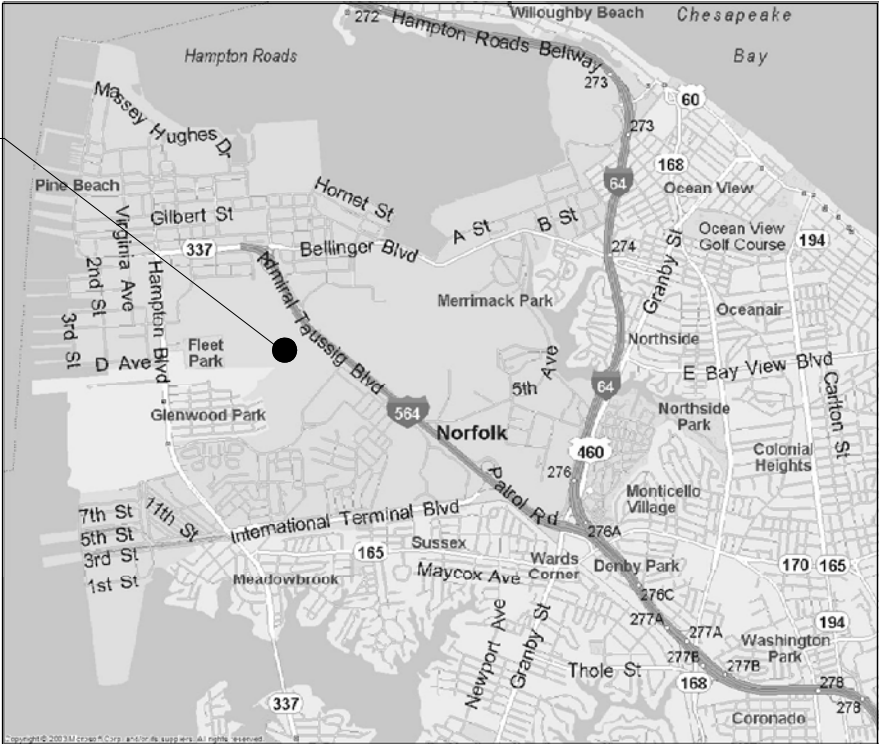
SHEET NUMBER	DRAWING NUMBER	TITLE
1	<u>GENERAL</u>	
	G-1	TITLE SHEET, INDEX TO DRAWINGS, VICINITY/LOCATION MAPS, AND DETAIL DESIGNATION LEGEND
2	<u>SITework</u>	
	C-1	SITE PLAN, ABBREVIATIONS, LEGEND, AND GENERAL NOTES
3 4 5	<u>EROSION CONTROL</u>	
	ES-1	EROSION AND SEDIMENT CONTROL PLAN - PHASE I
	ES-2	EROSION AND SEDIMENT CONTROL PLAN - PHASE II
	ES-3	EROSION AND SEDIMENT CONTROL PLAN - PHASE III
6	<u>STANDARD DETAILS</u>	
	SD-1	STANDARD DETAILS

PROJECT  
LOCATION



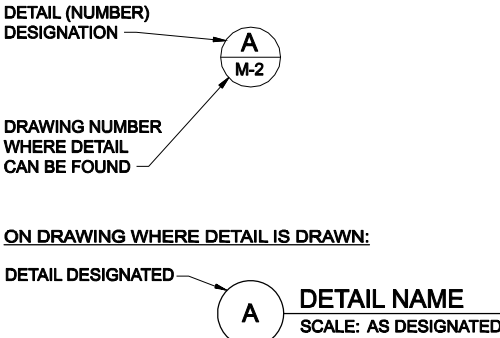
VICINITY MAP

PROJECT  
LOCATION



LOCATION MAP

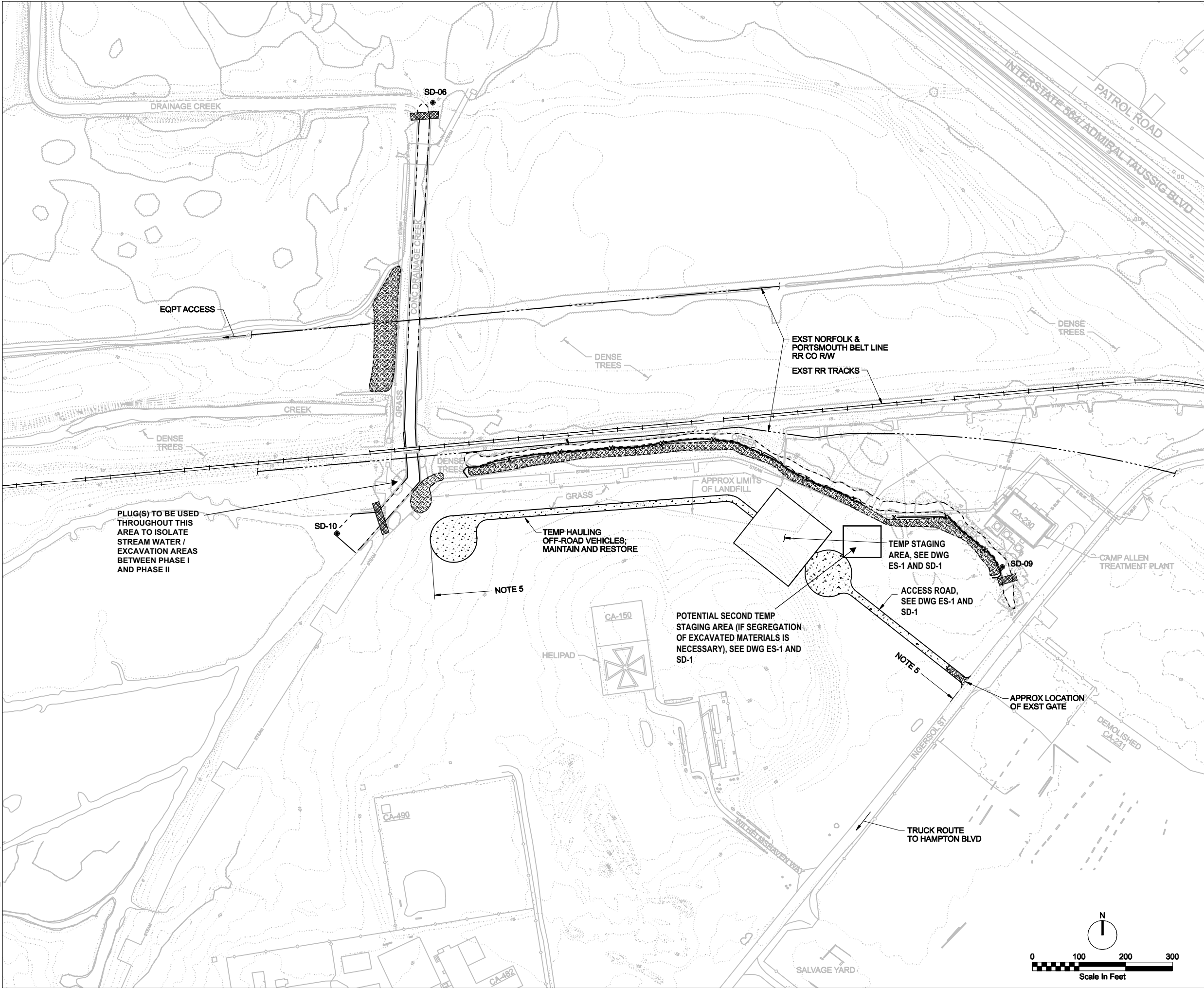
DETAIL DESIGNATION LEGEND



SHEET 1 of 6		NAVFLAC DRAWING NO.		SPEC.		CONST. CONT. NO. N62467-03-D-0260		DRAWING SIZE: D		CODE I.D. NO.		NAVAL STATION NORFOLK		ATLANTIC		NAVAL FACILITIES ENGINEERING COMMAND		CH2MHILL	
G-1												NORFOLK, VIRGINIA							
						EROSION AND SEDIMENT CONTROL PLAN						BOUSCH CREEK ECOLOGICAL ACTION							
						TITLE SHEET, INDEX TO DRAWINGS, VICINITY/LOCATION MAPS, AND DETAIL DESIGNATION LEGEND						DESIGNED BY		09A		403			
												DRAWN BY		04		404			
												CHECKED BY		E.L.C.		405			
												FUNCTIONAL APPROVAL		DATE		401			
												APPROVED		DATE		402			
												REVISED BY		DATE		04B			
												EFD FOR COMMANDER, NAVFLAC							
																		SYMBOL	
																		DESCRIPTION	
																		DATE	
																		APPROVED	



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ABBREVIATIONS

APPROX	APPROXIMATE
BLVD	BOULEVARD
CO	COMPANY
CONC	CONCRETE
CONSTR	CONSTRUCTION
DIR	DIRECTION
DWG	DRAWING
EQPT	EQUIPMENT
EXST	EXISTING
NEC	NECESSARY
NW	NORTHWEST
RR	RAILROAD
R/W	RIGHT OF WAY
TEMP	TEMPORARY
TYP	TYPICAL

LEGEND

	CLEARING LIMITS
	SEDIMENT REMOVAL LIMITS
	TEMPORARY DAM
	SILT FENCE
	SAMPLE LOCATION

GENERAL NOTES:

**PUMPING NOTES**  
TO FACILITATE WORK IN THE PHASE I AND PHASE II AREAS SUBMERGED UNDER STREAM WATER, PORABLE DAMS (FOR EXAMPLE, AQUADAMS®) WILL BE INSTALLED AT VARIOUS POINTS AS DETAILED ON SHEETS C-1, ES-1, AND ES-2 TO PREVENT FLOODING IN THE WORK AREAS ALONG THE CREEK AND CONCRETE-LINED CHANNEL. THESE DAMS WILL REQUIRE DAILY MONITORING AND ADDITIONAL PUMPING TO PREVENT WATER INTRUSION (NUISANCE WATER) IN THE WORK AREAS. IN ADDITION, A PLUG OR PLUGS WILL BE INSTALLED IN THE PIPE(S) THROUGH WHICH THE STREAM WATER FLOWS INTO THE CONCRETE-LINED CHANNEL IN ORDER TO ISOLATE THE PHASE I AND II EXCAVATION AREAS (IN CONJUNCTION WITH THE AQUADAMS). PUMPING ACTIVITIES WILL INCLUDE THE USE OF MECHANICAL/ ENGINEERING CONTROLS/DEVICES AND HOSES TO RE-ROUTE AND DIVERT WATER AROUND THE WORK AREAS. ANY SURFACE WATER WITHIN THE WORK AREAS WILL BE PUMPED OUT DOWNSTREAM PAST THE DAMS. THE WATER WILL BE PUMPED OUT AS PRACTICABLE AND FEASIBLE TO ENSURE THE DRIEST CONDITIONS DURING EXCAVATION WITHOUT CAUSING SEDIMENT ENTRAINMENT DURING PUMPING.

FILTER BAGS WILL BE USED DURING DEWATERING AND BYPASS OPERATIONS WHEN STREAM WATER LEVELS REACH APPROXIMATELY 6 INCHES FROM THE SEDIMENT SURFACE OR WHEN TURBIDITY IS VISUALLY CONFIRMED (THAT IS, FILTER BAGS WILL BE USED WHEN POTENTIAL EXISTS FOR ENTRAINMENT OF SEDIMENT IN PUMPED WATER). ONLY NONTURBID WATER WILL BE PUMPED WITHOUT FILTER BAGS. ADDITIONAL MEASURES (SUCH AS FILTERING THROUGH HAY BALS TO PREVENT SCOURING) MAY BE IMPLEMENTED TO REDUCE DISCHARGE VELOCITY AND SUCTION HOSES WILL NOT BE PLACED ON THE CREEK BOTTOM WHEN PULLING WATER TO BE PUMPED (THAT IS, MUDDY WATER WILL NOT BE PUMPED). NUISANCE WATER WILL NOT BE DISCHARGED OVER THE SITE ACROSS UNSTABILIZED, VEGETATED SURFACES, OR STORMWATER INLETS. WATERS WILL ONLY BE DISCHARGED BACK INTO BOUSCH CREEK OUTSIDE OF WORK AREAS. TURBIDITY CURTAINS WILL NOT BE INSTALLED DURING EXCAVATION IN THE PRIMARY AREA (PHASES I AND II) BECAUSE IT WILL BE A NEAR-DRY EXCAVATION USING AQUADAMS®. (EXCAVATION AREAS ARE ULTIMATELY SELF-CONTAINED BASINS). MUDDY WATER WILL NOT BE PUMPED; AND SEDIMENT-ENTRAINED WATER WILL ONLY BE PUMPED THROUGH FILTER BAGS.

WORK IN THE PHASE III AREA WILL NOT REQUIRE PUMPING. THE PHASE III AREA SEDIMENT REMOVAL WILL BE A WET DIG. THEREFORE, STREAM WATER WILL NOT BE MANAGED DURING THE EXCAVATION. HOWEVER, TURBIDITY CURTAINS WILL BE UTILIZED TO PREVENT MIGRATION OF ENTRAINMENT SEDIMENT DURING EXCAVATION ACTIVITIES. CONTROL MEASURES FOR PHASE III ARE DETAILED ON SHEET ES-3.

**INTERIM WORK AREAS**  
INTERIM WORK AREAS MAY BE CONSTRUCTED ALONG THE CREEK DURING EXCAVATION AND SITE RESTORATION ACTIVITIES TO MINIMIZE THE QUANTITY OF NUISANCE WATER THAT MUST BE HANDLED. THESE AREAS, IF NECESSARY, WILL BE CONSIDERED TEMPORARY AREAS. POTENTIAL INTERIM WORK AREAS DO NOT HAVE SPECIFIC SIZES; SIZING WILL BE BASED UPON ANTICIPATED PRODUCTION RATES WITHIN EACH AREA, STREAM WATER LEVELS, AND THE QUANTITY OF NUISANCE WATER THAT MUST BE HANDLED DURING EXCAVATION ACTIVITIES. EFFORTS WILL BE MADE TO MINIMIZE WATER INTRUSION AND DIVERT NUISANCE WATER USING MECHANICAL PUMPING METHODS AS NEEDED AND PER THE PUMPING NOTES ABOVE. ONCE THE EXCAVATION IS COMPLETED IN THE INTERIM WORK AREAS, THE WORK ZONES WILL BE MOVED ALONG THE CREEK UNTIL THE REMOVAL ACTION AND SITE RESTORATION IS COMPLETE.

**NOTES**  
1. LIMITS OF SEDIMENT REMOVAL FOR THE PRIMARY AREA ARE DETERMINED BY SEDIMENT SAMPLE LOCATIONS SD-06, SD-09 AND SD-10. HOWEVER, THE EXTENT OF REMOVAL TOWARD SD-10 IN PHASE II WILL BE LIMITED TO THE REACH OF THE EXCAVATOR FROM UPLAND AREAS (REFER TO SECTION 3.5 OF THE WORK PLAN). DEPTH OF SEDIMENT REMOVAL IS 2 FEET (OR TO CONCRETE IN THE CONCRETE-LINED CHANNEL [PHASE II] IF LESS THAN 2 FEET OF SEDIMENT IS PRESENT).  
2. LIMITS OF SEDIMENT REMOVAL FOR THE SECONDARY AREA ARE DETERMINED BY SEDIMENT SAMPLE LOCATIONS SD-01 AND SD-02. DEPTH OF SEDIMENT REMOVAL IS 2 FEET.  
3. SILT FENCE TO BE PLACED AROUND IMPORTED MATERIALS IF STOCKPILED ON SITE PRIOR TO PLACEMENT IN THE CREEK FOR THE SITE RESTORATION.  
4. ALL WORK TO BE DONE WITHIN THE NORFOLK & PORTSMOUTH BELT LINE RAILROAD RIGHT OF WAY SHALL COMPLY WITH RIGHT-OF-WAY REQUIREMENTS. NOTE: RAILROAD REQUESTS AT LEAST 24 HOURS NOTICE PRIOR TO ANY ACTIVITIES WITHIN RIGHT-OF-WAY. RAILROAD WILL PROVIDE SAFETY BRIEFING.  
5. SITE MAPPING WAS PROVIDED BY NAVAL FACILITIES ENGINEERING COMMAND-MID-ATLANTIC. UTILIZED PARTIAL SET OF PROJECT PLANS FOR BASE MAPPING/TOPOGRAPHY FROM THE "WATER LINE FROM CAMP ALLEN TREATMENT PLANT TO P-1" PROJECT (DATED MAY 2006).  
6. LOCATION OF TEMPORARY STAGING AREA(S), TEMPORARY HAULING, AND ACCESS ROADS ARE APPROXIMATE AND SHALL BE DETERMINED IN THE FIELD.

CH2MHILL

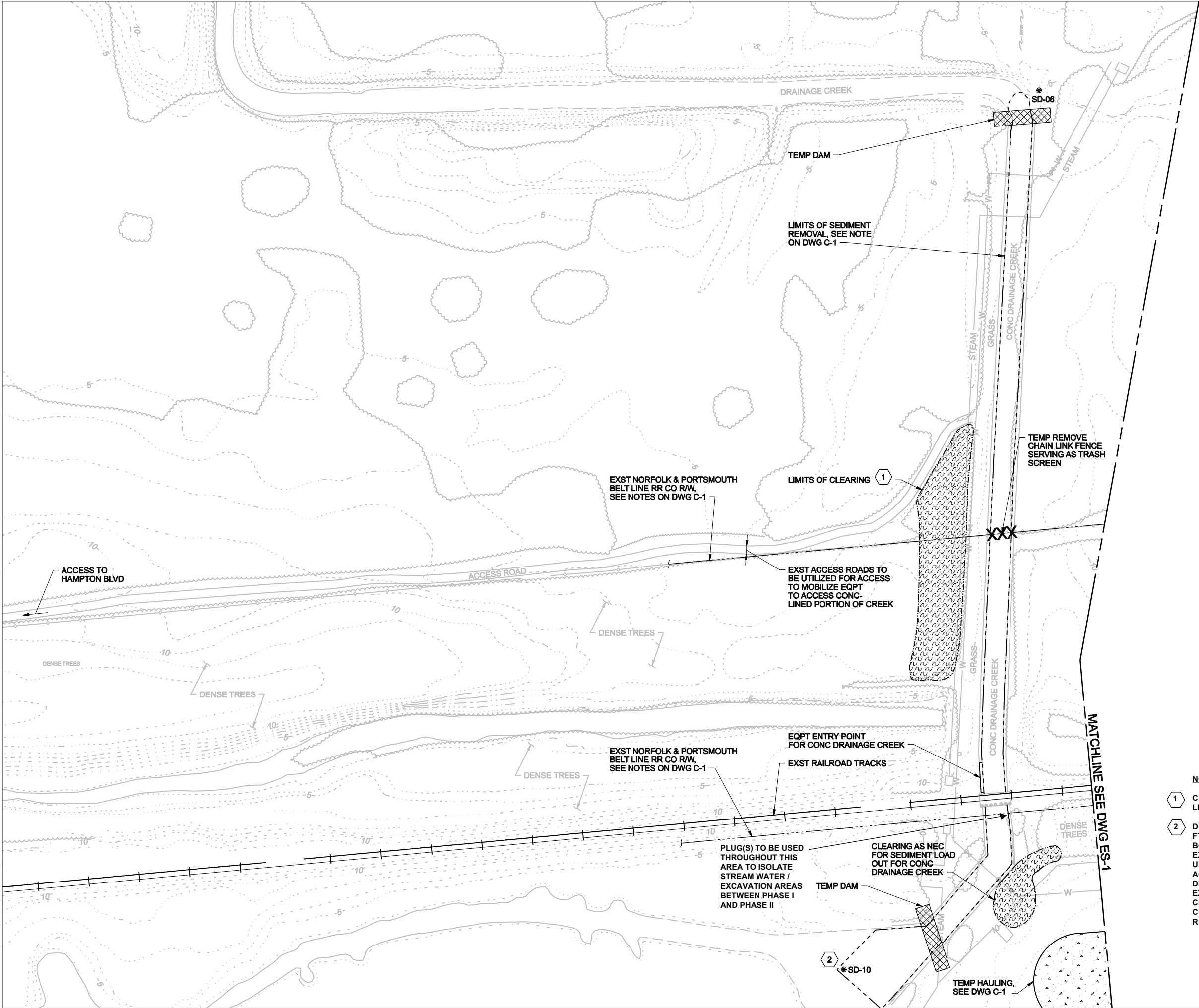
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DRAWN BY	JM FOLKLOUST	09A	09A	09A	09A	DATE
CHECKED BY	FUNCTIONAL APPROVAL	E.L.C.	E.L.C.	E.L.C.	E.L.C.	DATE
APPROVED		401	402	403	404	DATE
ED FOR COMMANDER, NAVFAC						
SEAL AREA						
REPORT OF THE WORK	NAVAL STATION NORFOLK	ATLANTIC	WATER ROUTE (SOUTHERN COMMAND)	NORFOLK, VIRGINIA		
CODE I.D. NO.						
DRAWING SIZE:	D					
CONST. CONT. NO.	N62467-03-D-0260					
SPEC.	NAVFAC DRAWING NO.					
SHEET 2 of 6						
C-1						







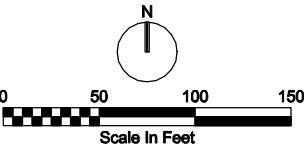
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## PRIMARY AREA PHASE II REMOVAL

### NOTE

- 1 CLEARING AS NEEDED TO MOBILIZE EQUIPMENT TO ACCESS CONCRETE-LINED DRAINAGE CREEK.
- 2 DUE TO PRESENCE OF WETLANDS AND THE WIDTH (APPROXIMATELY 100 FT, BASED UPON AVAILABLE MAPPING AND FIELD OBSERVATION) OF BOUSCH CREEK IN THE VICINITY OF SEDIMENT SAMPLE SD-10, SEDIMENT EXCAVATION WILL OCCUR TO THE EXTENT PRACTICABLE FROM THE UPLAND AREAS WITH A LONG REACH EXCAVATOR AT LOW TIDE. SITE ACTIVITIES DO NOT INCLUDE PROVISION FOR THE TEMPORARY DISTURBANCE OR RESTORATION OF EXISTING WETLANDS. AS A RESULT, EXCAVATION OF ALL BOUSCH CREEK SEDIMENT TO 2 FT ALONG THE CREEK TO SAMPLE LOCATION SD-10 MAY NOT OCCUR. ADDITIONAL CLEARING MAY BE REQUIRED TO OPTIMIZE THE REACH OF THE LONG REACH EXCAVATOR TOWARD SD-10.

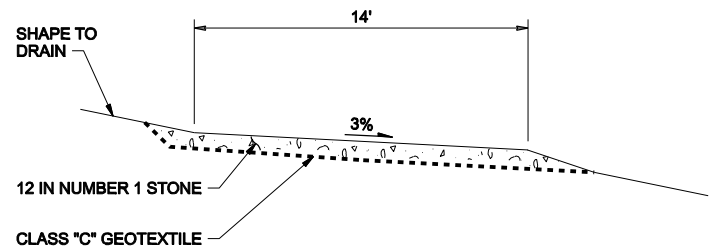


CH2MHILL		09A	403	DATE	
DESIGNED BY	PALANDIN	04	404	REVIEWED BY	
DRAWN BY	JM FOLQUIST	E.L.C.	405	DATE	
CHECKED BY	FUNCTIONAL APPROVAL	DATE	401	DATE	
APPROVED	DATE	402	04B	DATE	
EFD FOR COMMANDER, NAVFAC		SYMBOL		DESCRIPTION	
DATE		DATE		DATE	
ATLANTIC		NAVAL ROUTE NUMBER (COMNO)		SEAL AREA	
NAVAL STATION NORFOLK		NORFOLK, VIRGINIA		BOUSCH CREEK	
EROSION AND SEDIMENT CONTROL PLAN		ECOLOGICAL ACTION		EROSION AND SEDIMENT CONTROL PLAN	
EROSION AND SEDIMENT CONTROL PLAN		EROSION AND SEDIMENT CONTROL PLAN		EROSION AND SEDIMENT CONTROL PLAN	
CODE I.D. NO.		DRAWING SIZE: D		SHEET 4 of 6	
CONST. CONT. NO.		N62467-03-D-0260		ES-2	
SPEC.		NAVFAC DRAWING NO.			





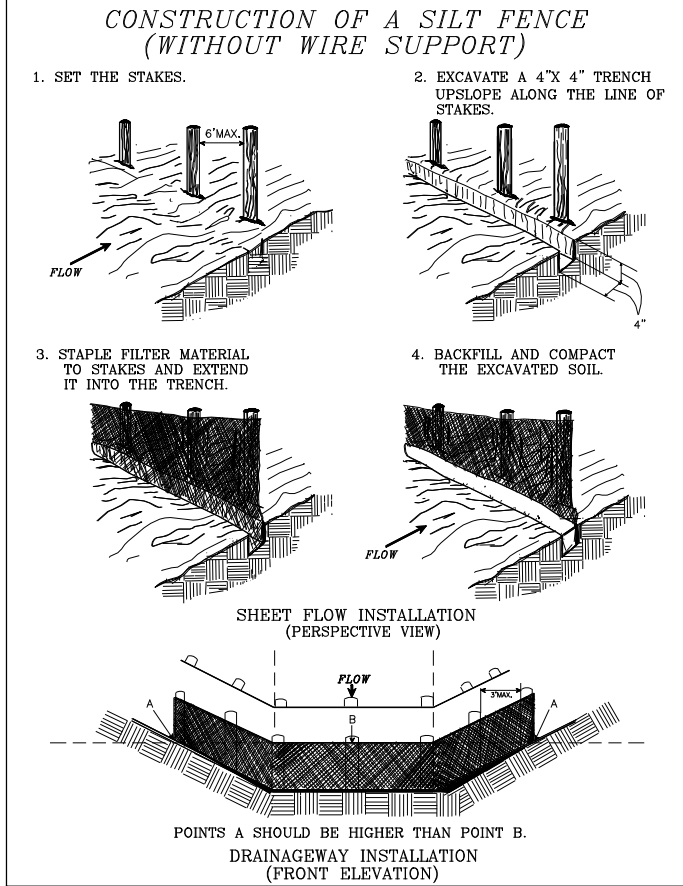




\* VIRGINIA EROSION AND SEDIMENT CONTROL STANDARD 3.03

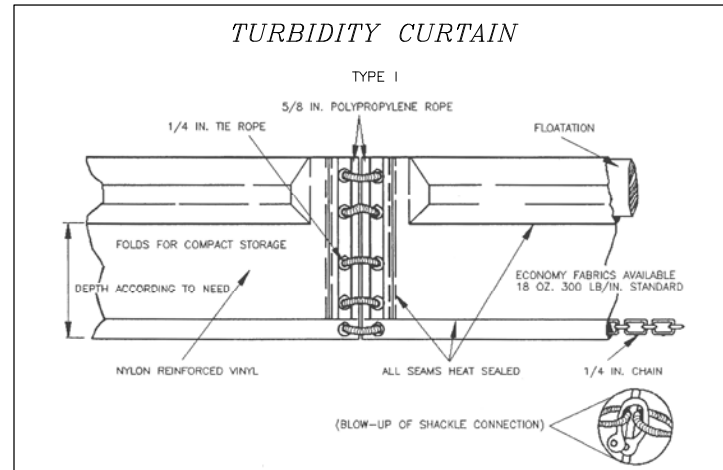
ALL CONSTRUCTION ENTRANCES AND/OR TEMPORARY ROADS WILL BE CONSTRUCTED IN SUCH A MANNER TO PREVENT EXCAVATING INTO THE CALF SOIL COVER. TO ACCOMPLISH THIS, ALL CONSTRUCTION ENTRANCES AND/OR TEMPORARY ROADS WILL BE INSTALLED ON THE EXISTING PERVIOUS SURFACES AT THE SITE CONTOURED TO CURRENT SURFACE ELEVATIONS. IF SLOPING AND/OR SHAPING NEEDS TO BE CONDUCTED ON THESE TEMPORARY SURFACES TO DRAIN SURFACE WATER RUNOFF, THIS WILL BE CONDUCTED BY SLOPING AND MAINTAINING THE AGGREGATE USED TO CONSTRUCT THE ROAD SURFACE.

# 1 ACCESS ROAD SECTION



SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, VA. DSWC Sherwood and Wyant

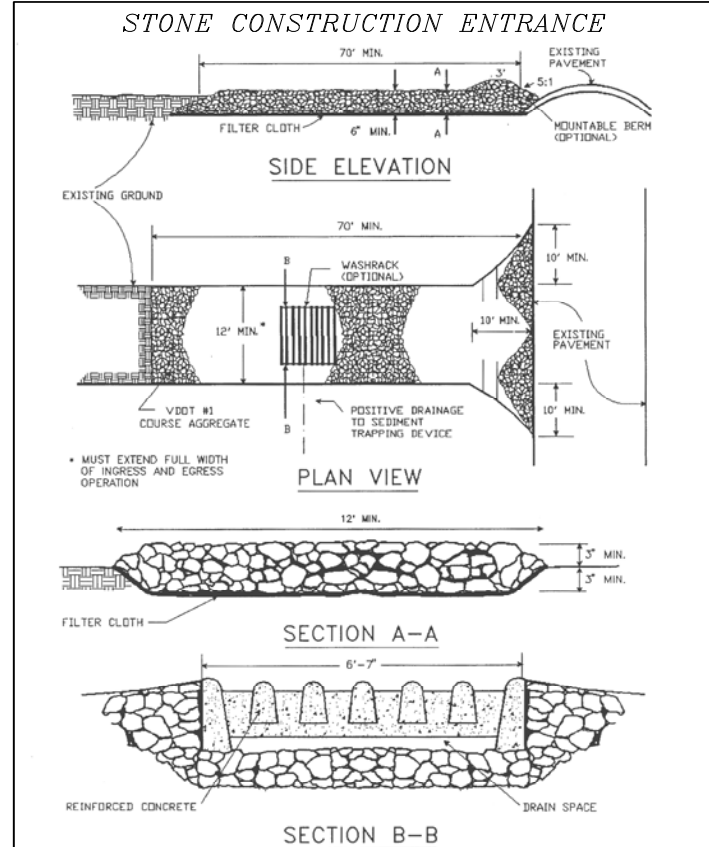
**3** **SILT FENCE**  
NTS



SOURCE: American Boom and Barrier Corp. product literature

PLATE. 3.27-1

**5 TURBIDITY CURTAIN**  
NTS

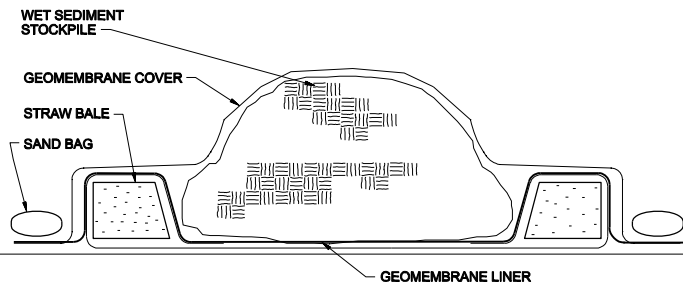


SOURCE: Adapted from 1983 Maryland Standards for Soil Erosion and Sediment Control, and VA. DSWC

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PLATE. 3.02-1

**2 CONSTRUCTION ENTRANCE**  
NTS



**SPECIFICATIONS FOR REMOVAL OF WET SEDIMENT**  
**NOT TO SCALE**

1. THE CONTAINMENT AREA FOR REMOVAL OF WET SEDIMENT WILL HAVE EROSION AND SEDIMENT CONTROLS IN PLACE PRIOR TO BEGINNING EXCAVATION.
2. ALL EXCAVATED WET SEDIMENT MATERIAL WILL BE PLACED INSIDE THE CONTAINMENT AREA FOR DEWATERING.
3. ALL EXCAVATED MATERIAL WILL BE COVERED IN INCLEMENT WEATHER, END OF WORKING DAY, OR WHEN NOT IN USE. MATERIAL WILL BE COVERED UNTIL REMOVED FROM SITE.
4. ALL WET SEDIMENT MATERIAL WILL BE PLACED IN THE CONTAMINATED MATERIALS STOCKPILE WITHIN THE CONTAINMENT AREA.
  - A. A CONTINUOUS PLASTIC TARP SHALL COVER THE BOTTOM AREA OF THE CONTAMINATED MATERIALS STOCKPILE.
  - B. AN 18 INCH HIGH STRAW BALE SHALL BE PLACED ON THE BOTTOM TARP, AND THE TARP FOLDED OVER INTO THE STOCKPILE AREA TO PREVENT FLOWS FROM INSIDE THE STOCKPILE AREA FROM EXITING THE STOCKPILE AREA.
  - C. CAUTION SHOULD BE TAKEN NOT TO RIP OR TEAR THE BOTTOM PLASTIC TARP WHEN HANDLING OR REMOVING MATERIAL.
  - D. THE MATERIAL WILL BE PLACED ON PLASTIC TARP INSIDE THE CONTAMINATED MATERIALS STOCKPILE AREA AND COVERED WITH A PLASTIC TARP AND SECURED WITH SANDBAGS.
  - E. AFTER DRYING, ALL EXCAVATED SEDIMENT WILL BE REMOVED FROM THE SITE AND DISPOSED AT AN APPROVED SUBTILE D FACILITY THAT CAN ACCEPT THE WASTE STREAM, PENDING CHARACTERIZATION RESULTS.
  - F. ANY DEWATERING FLUIDS WILL BE PUMPED FROM THE STOCKPILE, CONTAINERIZED, TESTED, AND EITHER DISPOSED OFFSITE AT AN APPROVED DISPOSAL FACILITY OR DISPOSED AT THE CALF TREATMENT PLANT ONCE APPROVED BY NAVY AND COORDINATED WITH THE CALF TREATMENT PLANT OPERATOR.

### WET SEDIMENT MATERIAL STOCKPILE DIAGRAM

**WET SEDIMENT MATERIAL STOCKPILE DIAGRAM**

[illegible]

**CH2MHILL**

DESIGNED BY	PALANDI	09A	403
DRAWN BY	JM HOLMQUIST	04	404
CHECKED BY	E.L.C.	405	405
FUNCTIONAL APPROVAL	DATE	401	408
APPROVED	DATE	402	04B
EFD FOR COMMANDER, NAVFAC		REVIEWED BY	
		DATE	

SEPARATE OF THE WAY	ATLANTIC	WMA # 100125 SHREVEPORT CORRAL
NAVAJOS STATION	NORFOLK	NORFOLK, VIRGINIA
BOUSCH CREEK ECOLOGICAL ACTION AND SEDIMENT CONTROL PLAN		
EROSION		
STANDARD DETAILS		
SPECIAL AREA		

CODE I.D. NO.
DRAWING SIZE: D
CONST. CONT. NO. N62467-03-D-0260
SPEC.
NAVFAC DRAWING NO.
SHEET 6 of 6 <b>SD-1</b>